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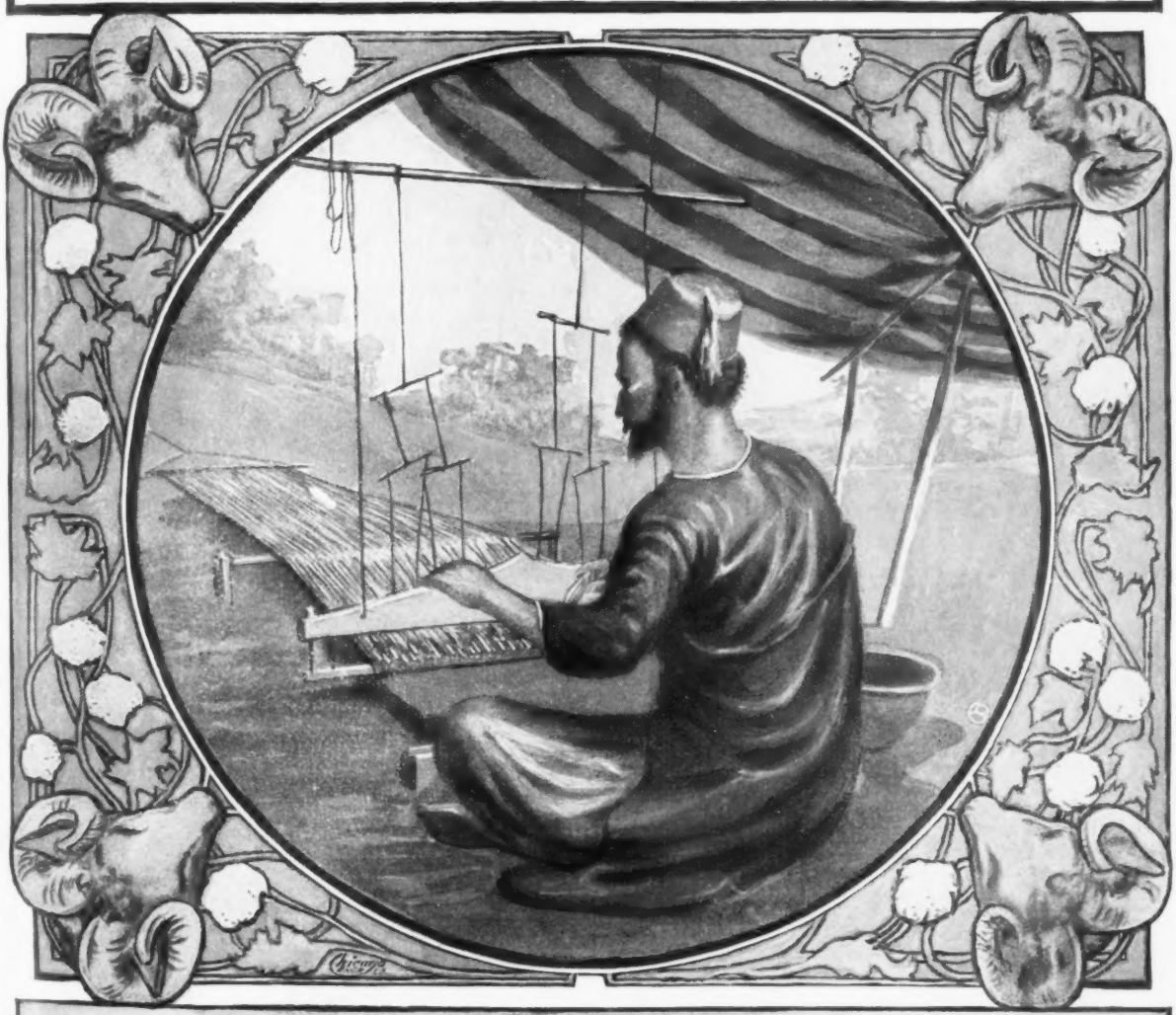

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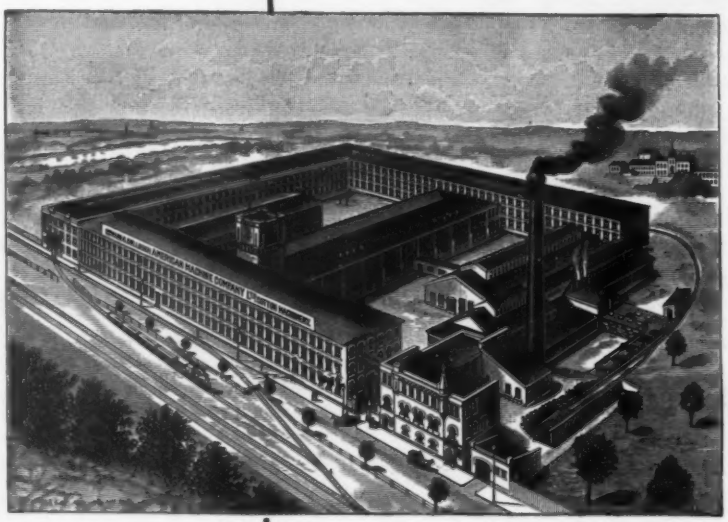

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Monthly Comment.

Speculation in Cotton.

The movement started by the Manchester (Eng.) Cotton Association to establish a cotton futures market at Manchester directs attention not only to the most serious evil in the world's cotton trade, but also to what makes that evil possible. Speculation in cotton futures is a standing menace to both the cotton grower and cotton manufacturer. It affords the gambler the means by which he can manipulate prices, forcing them up or down as may be to his advantage. The cotton grower has frequently experienced heavy losses by having the price of his product marked down by speculators before it is sold, and marked up afterwards. The cotton manufacturer has often seen his assets dissipated by the same process of price manipulation, which lowered the price of cotton and with it the price of all the material in process and finished goods unsold, or which raised the price of raw cotton after the manufacturer had sold the season's product at prices based on the low level of values for the raw material.

The instability of prices, the probability that values would be disarranged and heavy losses caused by the work of cotton gamblers, have caused the price of the finished product to be higher than would have been the case under more uniform market conditions. Producers and consumers have alike suffered from the operations of the cotton speculators. These evils have been due largely to the abuses in the methods of trading in cotton futures. It is doubtless true that this trade in futures is a valuable, possibly a necessary, factor in the cotton trade. But what should be a useful instrument for facilitating business has become distorted into a system of gambling, demoralizing to all branches of the trade, and with its legitimate function made subordinate.

The remedy for this evil is the reform and regulation of cotton exchanges. Despite the delay in bringing it about, this reform is a comparatively simple problem in the United States, because the facilities afforded by cotton futures for hedging and covering have not been extensively employed by American cotton manufacturers. In Europe, however, cotton futures have become an essential part of the business of cotton spinning and manufacturing. The English and Continental cotton spinners are as familiar with the intricate methods of the futures market and the erratic fluctuations of prices for fictitious cotton as are the members of the Liverpool Exchange. Buying cotton they do not expect to receive and selling cotton they do not expect to deliver are an essential part of the European cotton manufacturing trade as at present carried on. It is this fact that makes any real reform of cotton exchanges so difficult. Such a reform means a reorganization, not only of the cotton exchanges, but also

of the commercial and financial organization of cotton spinning and manufacturing. This fact is important, although it has been concealed during the past six or seven years by the clamor raised by the International Cotton Federation over the evils of gambling in raw cotton. The Federation has largely ignored the influence of supply and demand on the price of cotton, and has been ready at all times to ascribe any sudden or material advance in the price of cotton to the work of cotton speculators. At the last congress of the Federation at Brussels the president (now Sir C. W. Macara) in his address under the head, "The Chief Menace to the Industry," said:

> The great element of danger, however, is the undue inflation of the price of the raw material by the operations of combinations which have no interest whatever in either the growing of cotton, its legitimate distribution, or its manufacture. There has been a great deal of anxious enquiry, especially of late, as to whether it is possible to check this scourge by legislation. The difficulties so far in doing this appear unsurmountable, but I am on no uncertain ground when I say that what combination on the part of the users of cotton has already been accomplished in other directions proves that if it were applied to this, the greatest of all evils, the scourge could be removed.

No combination of users of cotton to restrict the consumption of cotton will ever remedy the evils of speculation in cotton futures so long as these same users continue to make cotton futures an essential part of their own business. How essential trading in cotton futures is to the English spinner is conclusively shown by the move to establish a futures market at Manchester. The Liverpool Cotton Association refused to accept cotton landed at Manchester as a good delivery on futures contracts, and as a result Manchester resolves to have a futures market of her own, something that the Manchester Royal Exchange does not provide, but which the cotton spinners and manufacturers of Lancaster cannot do without. This common use of the cotton exchange by both manufacturer and speculator, with its uses and abuses inextricably interlaced, is what makes the eradication of the evils of cotton speculation so difficult. But whether Lancashire establishes a futures market at Lancashire or not, it is to be hoped that the International Cotton Federation will abandon the attempt to place the blame for high priced cotton upon a system whose evils are made possible mainly by the cotton spinners and manufacturers themselves.

"Conditioned" Yarn Counts.

The United States Board of General Appraisers on Jan. 11, handed down a decision sustaining the protest of Max Bouchsein against Collector Loeb's assessment of the duty on a lot of schappe silk yarn. Under the Payne law the duty on schappe yarn is graduated according to value and size of yarn, No. 205, metric count, being one of the dividing lines. The appraiser when assessing the duty reeled the yarn and found it to be No. 210 in the condition in which it was imported, and subject to the higher duty imposed on yarn finer than No. 205. The importer filed a protest on the ground that in determining the count the "conditioned" weight of the material should be taken as a basis, instead of the actual weight. Samples were drawn from the lot and tested by the United States Silk Conditioning Company, the conditioned count being determined by adding 11 per cent. to the absolutely dry weight of the yarn. This was accepted by the Board of Appraisers as a basis for the following decision:

> Samples of the yarns taken from two of the bales here in question have been "conditioned" according to the method above described by the United States Silk Conditioning Company, a corporation doing business under the auspices of the Silk Association of America, and from the reports of that company admitted in evidence, it appears that the size of the yarns in one bale, when ascertained according to the metric system, is No. 102, two-ply, while in the other bale the size is 203 3/4, two-ply. The testimony also shows that it is the custom of the trade in buying and selling schappe silk yarns to allow a variation in the number of 2 1/2 per cent. in this country, and 3 per cent. in England, either above or below the recognized commercial number. That is to say, if No. 100 singles are ordered and the spinner delivers 97 to 97 1/2, or 102 to 103, it would be a good delivery on such an order, and if a 200 two-ply should be ordered, the variation might run from 195 to 205.
>
> We think these trade usages must be followed in ascertaining the number of schappe silk yarns under paragraph 397, and we accordingly hold that

the yarns here in question, which are known commercially as No. 200 two-ply, are dutiable as such.

In reaching this conclusion we have not failed to observe the inhibition in paragraph 404 that

In ascertaining the weight of silk under the provisions of this schedule, either in the threads, yarns, or fabrics, the weight shall be taken in the condition in which found in the goods, without deductions therefrom for any dye, coloring matter, or other foreign substance or material.

We think it unnecessary to decide whether the allowance for moisture in such a case as this can be said to be a deduction for "other foreign substance or material," for we are satisfied that this statute can have no application to the method of ascertaining the weight of the yarn for the sole purpose of determining its number according to the metric or French system.

I find nothing in the statute to prohibit such allowance for moisture as may be required to ascertain the true number of the yarn, and we think it is reasonable to adopt the rule recognized by the trade, as the only one which will lead to accurate results. We therefore hold that the weight of the yarn, which is to be taken as a basis for determining its number according to the metric or French system, must be the absolutely dry weight plus 11 per cent. for moisture. This rule fixes a standard which will accurately ascertain the number of the yarn, and it is the rule which, as we have seen, is followed by silk conditioning houses when called upon to act as arbitrators in the settlement of disagreements as to the number or size of yarns of this character. Applying the rule to this case, and allowing 2 1/2 per cent. for the variation in the number, either above or below the recognized commercial number, as the testimony shows, without any conflict, is usual in the trade, we find that the yarns here in question are number 200, two-ply.

It is a reason for gratification that the Board has thus adopted conditioned weight as a basis for assessing duties and this decision marks an important step in the introduction of the practice of conditioning in this country. When we come to the allowance of 2 1/2 per cent. for variation in the size of the yarn, the decision appears to be open to some question. The conditioning house found that the conditioned count of one lot was 203 3/4, and the Board decides that this comes within the limits of variation for No. 200 yarn, and accordingly orders the lower duty to be assessed. No. 203 3/4 yarn also comes within the allowable limits of variation for No. 208 yarn, which under the Payne act is subject to the higher duty. Why should the allowance be reckoned so as to reduce the duty? Why is there not as good reason for reckoning the allowance so as to subject the yarn to the higher rate? Why should any allowance be made for variation of the conditioned count when assessing duties on yarn? Is it to be the settled rule of the Treasury Department to deduct 2 1/2 per cent. from the conditioned count of imported yarn and thus favor the importer when the count is sufficiently close to the dividing line? These are questions that we would like to have answered. We think that domestic manufacturers would also like to have them answered.

Imports of Wool.

A comparison of the imports of wool for the eleven months ending November, 1910, with those for the corresponding period in 1909 and 1908, discloses some striking fluctuations in the wool trade as a result of the panic of 1907, the business revival in 1909, and the sudden and severe depression that began late in 1909 and still continues. The figures for these three periods are as follows:

	1908.	1909.	1910.
Class 1 lbs.	60,268,245	139,567,370	83,423,197
Class 2 lbs.	12,780,541	29,325,501	16,530,257
Class 3 lbs.	50,151,603	122,870,418	70,437,141
Total lbs.	123,200,389	291,763,289	170,390,595

The imports for the 1908 period were the smallest since 1901. Those for 1909 were the largest since 1897, when they reached extraordinary proportions owing to the rush to get wool into the country free of duty before the Dingley bill went into effect. The increase in class 1 and class 2 wools from 73,048,786 pounds in the eleven months of 1908 to 168,892,871 pounds in 1909 was the result of that general feeling of optimism that pervaded the wool trade in 1909. Events have proved that sentiment to have been a mistaken one, but in the early months of 1909 it was a reality. American buyers crowded the London and colonial auction rooms, bidding against one another as if the sole object in good trading was to buy. Their purchases swelled the imports of wool for the eleven months ending November of that year to the size shown in the above table. About October, 1909, there began what proved to be the most sudden and the greatest change that has probably ever taken

place in the wool trade of this country. The optimism of the spring and summer made way for a feeling of conservatism that had its origin among the manufacturing clothiers and rapidly extended to the wool manufacturers and dealers. At the next London and colonial auctions it was found that many American houses had saved expenses by keeping their buyers at home, while the Americans in attendance were distinguished chiefly by their caution. The effect of this sudden and radical change of sentiment is partially shown by the imports for the eleven years ending November, 1910. The full effect of the shrinkage is shown to better advantage by the imports for the months of November, 1909 and 1910.

Of class 1 wool the imports in November, 1909, amounted to 3,446,316 pounds; in November, 1910, to only 678,117 pounds.

The imports of class 2 wool in November, 1909, amounted to 3,446,316 pounds; in November, 1910, to only 1,095,110 pounds.

Of class 3 wool the November, 1909, imports reached 12,466,888 pounds; the November, 1910, imports, 4,929,061 pounds.

Wool of all kinds brought into the country dropped from 20,572,748 pounds in November, 1909, to 6,702,288 pounds in November, 1910.

This drastic curtailment of the American wool trade is in marked contrast to the steady prosperity that has prevailed without interruption in the same trade abroad during the same period. The disturbance is confined to the United States, and is due to the operation of the natural remedy for a disarrangement of supply and demand. The decreased imports of 1910 means a smaller supply of wool in the United States. The consumption of wool goods by the ultimate consumer in this country has also decreased, but it must necessarily continue in large volume. That necessity is the basis of trade, and the shrinkage of the wool import and wool manufacturing trade means an earlier restoration of a normal condition of trade.

The number of cotton spindles in the United States in 1910 is 29,188,945, as compared with 611,848 for 1909.

Exports of Cotton.

For the fiscal year ending June, 1910, the exports of raw cotton amounted to 3,207,000,000 lbs., valued at $450,400,000. This exhibit is in striking contrast with the showing for 1899 when the raw cotton exports amounted to 3,773,000,000 lbs., valued at $209,600,000. In 1910 we exported 566,000,000 pounds more of cotton than in 1899, and yet received $240,800,000 more for it, the price in 1899 having averaged 5 1/2 cents a pound, and in 1910, 14 1/2 cents. The increase in our income as a result of an advance of 9 cents a pound in the price of cotton is perhaps made even more evident when we consider that at the 1899 price, 5 1/2 cents a pound the cotton exported in 1910 would have amounted to only $178,000,000, whereas the actual value was $450,400,000, an increase of $272,400,000. While this is a great gain for the United States, and particularly for the South, it means a corresponding drain on the resources of foreign countries, and makes plain the business strain to which the manufacturing industry has been subjected both at home and abroad as a result of the necessity of readjusting business to 15 cent cotton.

The Silk Association of America.

The thirty-ninth banquet of this association was given at the Hotel Astor, New York, on Feb. 11. A larger number were in attendance than on any previous occasion, showing the growth of this organization in numbers and influence under the administration of Secretary Huber and his active assistant, Ramsay Peugnet, His Excellency Chang Yin Yang, the Chinese minister, Senator Heyburn, Congressman Fordney, Justice Swayze, of the New Jersey Supreme Court, Hon. James A. Emery, Rev. B. Canfield Jones and Rev. John C. Goddard.

About 77 per cent. of all the mule spindles now employed in the United States for spinning cotton are in the New England States, and most of the others are in New York and New Jersey.

The Meeting of the National Association of Wool Manufacturers.

The annual meeting of this association was held at the New Willard Hotel, in Washington, on Feb. 1st, and in view of the prominence which wool tariff matters have had of late the occasion was of special interest. The choice of Washington as a place for the meeting and the desire to show loyalty to the retiring president and welcome to his successor brought a large number of manufacturers together, Philadelphia being particularly well represented, to pay honor to their fellow manufacturer and new president, John P. Wood. The old guard from New England who have fought so many battles for the association were there in goodly numbers.

The business meeting was held in executive session and reports for the year were read and plans for the ensuing year were discussed. It was the generally expressed sentiment that an aggressive campaign should be undertaken for the education of the public and present the association's side of the tariff case with full publicity in reply to the criticisms which have been so freely directed at the wool tariff schedule. Neither in the sentiment expressed at the meeting nor in the speeches and the banquet, did there appear to be an evidence of compromise or change from the standpat position previously held. The resolutions which were adopted showed a willingness to cooperate with the tariff board in furnishing full information and every assistance possible and President Wood in his remarks emphasized this point.

At the business meeting and in the speeches frequent allusion was made to the services of the retiring president, who was given every evidence of the appreciation of his services on the part of his fellow members.

Wm. Whitman's Address at the Business Meeting.

Our industry has experienced many vicissitudes since the outing of our association in the summer of 1908, in the picturesque, historic town of Marblehead on the beautiful shore of Massachusetts Bay. Then the industry was just recovering from the disastrous panic of the preceding year. Although a presidential election was impending, and an assault upon the tariff was threatened, we were confident of the result of the election and equally so that Congress would not enact laws inimical to our industry. Our hopefulness and confidence were voiced by our guest, the Hon. Carroll D. Wright, who soon after passed to his final home, where we hope there is rest, no trade to vex, and no mills, corporations, or railroads to denounce. Whether it be true or not that rich men shall hardly enter that blessed abode, we may be sure that those of them who do, unable to take their riches with them, will be free from envy and detraction.

The dominant party, as expected, was continued in power. After eight months of exhaustive preparation the Congress enacted a new tariff law. This law conserves every American industry. I was opposed to tariff revision. You will remember that I stated in your behalf to the Ways and Means Committee: "We have during the past five years believed that any gain that might come to us under a new law would be more than offset by the evils necessarily attending tariff agitation. Therefore, our industry has not joined in any movement for increasing, reducing or removing any duties in any industry." I believed that the period of recovery from panic conditions a most unfortunate time for such revision. As to the law which was passed, however, I wish to declare with all the emphasis of which I am capable that in my judgment it is the best tariff law that has ever been enacted. The great leaders who successfully advocated the measure, and the Congress that passed it should be proud of their handiwork. They are entitled to the gratitude of the people for their patriotic labors. Should this law remain in operation for a reasonable time its bitterest enemies would become its firmest friends.

In its most important provisions the Payne-Aldrich Law marks a great step in advance of all the tariff laws which preceded it. These provisions, however, are not well known to the public at large. They are:

1. Improved methods for the valuation of foreign merchandise to prevent fraud upon the revenue by undervaluations.

2. The establishment of a customs court to bring quickly to a final settlement disputed cases between importers and the government.

3. Maximum and minimum rates of duty. The maximum rates to be applied only to imports from those nations which should discriminate against the products of our country.

From a national point of view the value of these maximum rates in our relations to foreign countries can hardly be overestimated. They have put an end to all discriminations against our country by foreign nations and allayed the fears of many of our own people who dreaded threatened loss of trade from such countries. It was the assertion of

a national prerogative becoming the dignity of a great nation; the announcement of a national policy that was not to be governed by fear or threats of retaliation. The stagnation in business and abnormally low prices of commodities consequent upon the panic were followed by exceptional business activity and rapidly-increasing prices, while the tariff bill was under discussion. Overtrading marked the period; new enterprises on a large scale were undertaken. There was a mania for building upon the expectations of the future. Imports were largely increased. It was too generally believed that the country had fully recovered from the disastrous effects of the panic.

This proved to be a mistake. The country had not returned to normally healthy conditions. The reaction referred to was too violent, and it would probably have been followed by another period of less activity even had there been no tariff legislation. This would have been only natural. The forces of nature are always at work adjusting and readjusting natural conditions. So in the business world there are laws or forces always at work in the adjustment and readjustment of men's business relations to each other, and the relations of the different industries or occupations to each other. These involve overchanging conditions, not alone in our own country, but in the whole business world, independently of governmental laws or restrictions. Whatever may be the occupation, the man engaged in it under such natural conditions must "take his own risk." In the natural order of things there would probably have been less activity in business in 1910, following the exceptional activity of the latter half of 1908, and the year 1909.

The extreme depression of last year, however, was mainly due to wholesale denunciation of the Tariff Law, the fear of further tariff revision and political unrest. The new act from the outset was violently assailed. It was denounced by its enemies and "damned with faint praise," or apologized for by many of its friends. The alleged high cost of living and advanced prices of commodities from abnormally low prices, were all wrongfully attributed to it. Men cannot but honestly differ in opinions in regard to the problems of life. Such differences are entitled to mutual consideration and respect.

The tariff could be removed from party strife for many years to come should the leaders of the Democratic party decide to do it. It would seem to be wise, statesmanlike and patriotic for them either to permit the present law to remain in force or to frame a new law so wise and beneficent in its provisions that it would conserve our industries and at the same time satisfy the reasonable expectations of others. All the issues that divided the two great political parties for the past fifty years have been settled with the exception of the tariff. What marvelous changes in industrial conditions have taken place during that period, especially in the Southern States, and what has been accomplished in these Southern States is only a forerunner of the greater things to come. These changed industrial conditions fully warrant a modification of the Democratic party's policy of the past. Why should it, therefore, adhere to a traditional tariff policy which, if carried into effect, will surely end in early defeat; why should it not deal with present conditions rather than with inherited theories? If the great Calhoun could visit his native State today, he would be amazed and at the same time gratified with its wonderful industrial advancement under the very policy to which he was opposed. This may be and probably is illusive, but no more so than the suggested plans for preventing the tariff from becoming the foot ball of politics.

In closing this, my last address as an official to my associates, I direct your attention to the fundamental error under which the opponents of the so-called protected industries labor, and I am now speaking of honest-minded opponents. The occasion will admit of an elaborate presentation. I can speak only upon a few salient points in connection with our own manufacturing industry. The tariff on woolen manufacturers is alleged to be "legislation for a special interest." We woolen manufacturers are characterized as "tariff beneficiaries." Our industry is classed as a "protected industry," and differentiated from other industries which are classed as "unprotected industries."

This error must be eradicated from the minds of men in high places and their followers before our true relations with the great army of workers and upbuilders of our country can be comprehended and appreciated. I believe elementary education in this regard to be imperative. We are not tariff beneficiaries; we never have asked and have never been granted special legislation for our interests. We never have been, we are not, we would not be if we could, on the charity list of our country. And as a corollary to this, that woolen manufacturers are favored by legislation above others, whereby they acquire riches, receiving tribute from those engaged in so-called non-protected industries. I assert that the so-called non-protected industries are the only absolutely protected industries in our country. This is by reason of geographical position. I also assert that the so-called protected industries are only partially protected, and, because of this, capital and labor in the latter are less remunerative than in the former. The fundamental error of which I am speaking has been so instilled into the public mind by doctrinaires and theoretical economists that it has become altogether too generally accepted as truth. Because of the prominence of its teachers, it is all the more dangerous.

It has been the policy of our country so to legislate that such industries as can be successfully carried on within our borders shall be transferred from foreign countries to our own country. This policy has resulted in making our country the largest manufacturing nation in the world. Our industry under this policy has kept pace in development with others. It is an essential part of the industrial equipment of the country. We especially deprecate the assaults upon the textile industries. Legislation that would cripple them or make them relatively less prosperous than others would be class legislation for the alleged purpose of favoring the interests of other and absolutely protected industries.

We ask no favors, but we may demand as a right that the woolen industry shall have equal oppor-

tunities with all other industries. Those in other industries cannot reasonably expect that those engaged in the woolen industry, only a partially protected industry, have a special mission to furnish materials for their clothing without reasonable and proper profits, a profit relative to that secured by other industries, however they may be classed.

Of myself and my work in connection with our association it is not necessary to speak, because it is on record. It has always received your support. Whether this has been for good or ill, the record cannot be changed, and my work must be judged by it.

Annual Report of the Secretary.

At the business session Secretary Marvin delivered his annual report as follows:

To the Members of the National Association of Wool Manufacturers:

In obedience to the by-laws of the association, the secretary herewith submits his report for the year ending with the last day of January, 1911.

The year just closing is one which goes without regret on the part of the wool manufacturers of America. It has witnessed a long, severe depression. There have been times during the year when probably one-half of the woolen machinery in the United States was idle. At present, perhaps, a somewhat better condition prevails, but the existing rate of production is altogether unsatisfactory and the outlook is exceedingly uncertain.

There is one main cause for all this—and that is the persistent political agitation of which the wool and woolen industry has been the devoted target. During the year 1909, in the middle of which the Aldrich-Payne tariff was enacted, our industry as a whole enjoyed a fair degree of prosperity. But a similar change came at the beginning of the present year. Schedule K was singled out for a particularly vicious attack by widely read magazines and newspapers, encouraged by interests opposed to the protective system. The National Association of Wool Manufacturers has been able to meet and answer some of these attacks, but many of these false and misleading statements have flown far afield, and have unquestionably created a deep prejudice against our industry in the minds of a large portion of the American people. One important work of the association for the coming year must be to devise means of grappling on a more comprehensive scale with the campaigns of misrepresentation on the part of our adversaries, which have reached every corner of the United States.

Though an effort will undoubtedly be made in the next Congress by the leaders of the anti protection majority in the House of Representatives to reconstruct Schedule K, this cannot succeed without the cooperation of the Senate and the President. It would be most unjust to reduce the duties on wool and the manufactures of wool without making a proportionate reduction in the duties on the indispensable supplies and materials of the industry contained in other schedules of the tariff. The plan of schedule by schedule revision, though earnestly favored now by many sincere men, will have far fewer friends next year when the process has been more searchingly considered.

But to frame a hostile tariff bill is one thing and to secure its complete enactment is another. In order to succeed, the anti protection leaders of the House must win the assent of the Senate, where the majority will remain at least nominally protectionist. Inasmuch as all of the so-called progressive senators of the middle West insisted on the maintenance of the present rates of duty on the raw wool of their constituents throughout the framing of the Aldrich-Payne law, it is improbable that a majority can be secured in the Senate, as it will be constituted in December next, for any tariff revision measure which radically reduces the protection now given to either wool growers or wool manufacturers. The people of the West will be quick to understand that inadequate protection to American mills and a consequent flood of imported goods from Europe would be as disastrous to the wool growing interest as if wool were put upon the free list. This is a fact which the National Association can profitably impress upon the consciousness of the whole United States.

In a short time the results of the important inquiry undertaken last year by this association into the wool manufacturing industry in America will be ready for publication. Most of the requisite material is now in hand, and when this is properly arranged and analyzed the association will be in the possession of more knowledge about the industry than has ever before been made available. Requests for reports have been addressed to nearly 2,000 wool manufacturing establishments, and practically all of the concerns of real consequence have responded. The complete returns will be ready in advance of the very full and ambitious reports of the Federal government, and it is the purpose of the association to revise the facts and figures year by year, so that the very latest and most authentic information can always be had as to the condition of our industry.

The work of the new committee on undervaluation is proceeding, quietly and satisfactorily, and this undertaking has received hearty approval from the members of the association. Recent developments have proved the need of such a work. Undervaluations have been practiced on a large scale by importing houses, which, when called to account, have confessed judgment and made some restitution to the government. But American manufacturers who were cheated of their due protection have not been compensated, and our industry can have fair play only by the rigid prevention of these practices, which war alike against American industry and the national revenue.

The report would be incomplete without a word of gratitude for the cordial support which the secretary has received in all his work from the officers and members of the association. And due acknowledgment should be made of the faithful assistance of Mr. William J. Battison, whose experience and knowledge make him of great value

in the office work of the association, particularly in the department of statistics and the preparation of the Annual Wool Review.

All of which is respectfully submitted.

Winthrop L. Marvin, Secretary.

Boston, Jan. 31, 1911.

Resolutions were adopted as follows:

Resolved by the National Association of Wool Manufacturers, That accepting with great reluctance and regret the announced purpose of Mr. William Whitman to retire from the presidency of the association, we record our high regard for Mr. Whitman and our deep appreciation of the extraordinary service which he has rendered to the association and the entire wool manufacturing industry of the United States.

Resolved, That for 41 years an active member and for 17 years president of this association, Mr. Whitman has borne a larger part than any other man of his time in making possible that wonderful textile development by which the American people are now independent of foreign supply for all clothing fabrics.

Resolved, That the broad, exact information, vigor and incisiveness with which Mr. Whitman for so many years has championed the cause of the American wool manufacture and the great principles of the protective system have placed under enduring obligation to him, not only American manufacturers and their operatives, but all patriotic citizens who rejoice in the evolution of a great national industry, so essential to the welfare of the country in both peace and war. Such leadership in economic achievement is in the truest sense a national service of the first importance.

The Committee on Resolutions submitted the following, which were unanimously adopted:

Resolved, by the National Association of Wool Manufacturers, That we reaffirm our belief in the American system of protection as the best system alike for the manufactures, the agriculture and the commerce of the United States.

Resolved, That we approve the underlying principles of Schedule K, as embodying the best practicable results of many years of study by the ablest economic students among the public men of America, and we urge that no changes be attempted in that Schedule until the Tariff Board shall have made new, exact and comprehensive information available for the guidance of Congress and the country.

Resolved, That we reaffirm the declaration of the Executive Committee of this association on Oct. 20, 1910, in favor of laying all essential facts regarding the wool manufacture before the Tariff Board whenever such statements are requested, and that we earnestly recommend to the wool manufacturers of America that they make a prompt and frank response to all inquiries of the Board, in furtherance of the most accurate and complete understanding of the truth in regard to this great national industry.

Resolved, By the National Association of Wool Manufacturers, that we regret the retirement of Major Charles A. Stott, of Lowell, Mass., from the Executive Committee of this association, and that we record our deep appreciation of his service to the association, to the American system of protection and to the promotion of the best interests of our industry in the United States.

A complete new list of officers and committees for the ensuing year is as follows:

President—John P. Wood, Philadelphia, Pa.

Vice-Presidents—Charles H. Harding, Philadelphia, Pa.; William M. Wood, Boston, Mass.; Frederic S. Clark, North Billerica, Mass.

Secretary and Treasurer—Winthrop L. Marvin, Boston, Mass.

Executive Committee—Andrew Adie, Boston, Mass.; Chester A. Braman, New York, N. Y.; Frederic C. Dumaine, Boston, Mass.; Frederick C. Fletcher, Boston, Mass.; H. A. Francis, Pittsfield, Mass.; Louis B. Goodall, Sanford, Me.; Edwin F. Greene, Boston, Mass.; Joseph R. Grundy, Philadelphia, Pa.; A. Park Hammond, Rockville, Conn.; Franklin W. Hobbs, Boston, Mass.; Geo. H. Hodgson, Cleveland, O.; John Hopewell, Boston, Mass.; Ferdinand Kuhn, Passaic, N. J.; Geo. E. Kunhardt, Lawrence, Mass.; C. W. Leonard, Boston, Mass.; J. R. MacColl, Pawtucket, R. I.; Francis T. Maxwell, Rockville, Conn. J. F. Maynard, Utica, N. Y.; Joseph Metcalf, Holyoke, Mass.; Thomas Oakes, Bloomfield, N. J.; William H. Sweatt, Boston, Mass.

The banquet at the New Willard Hotel in the evening was attended by many manufacturers and a large number of guests in auxiliary lines, as well as by Congressmen, members of the Tariff Board and other distinguished persons.

President Wood's grace and ability as a presiding officer was a subject of very favorable comment. His own speech was very well received.

Charles H. Harding's speech was a forceful presentation of many technical arguments in reply to criticisms which have been directed against the schedules. He is always an interesting speaker.

William M. Wood, president of the American Woolen Co., spoke along the lines of general protection principles, and paid special attention to the carded wool manufacturers.

Senator Warren spoke at great length on the position of the wool grower. There was such a wealth of oratory that it was a late hour when Senator Lodge and Speaker Cannon were called upon and their remarks were necessarily brief, and Senator Smoot, who was expected to speak, did not do so.

Address of President John P. Wood.

The present is not an opportune moment for me to speak at length. We are to be addressed by certain of our guests and members, each of whom is in a particular way notably qualified to inform and counsel us upon subjects of vital interest to us, not merely as men engaged in the woolen industry, but in a larger and broader way, as citizens of a common country, sincerely concerned for its welfare in all things, including that material prosperity upon which its moral and intellectual development must rest. (Applause.)

To give the distinguished speakers whose messages we desire to hear without abridgement the most ample allotment of time (always too brief at such events as this), their introductions will be in the briefest form, and I shall confine my remarks to the statement of a few suggestive facts that are commonly overlooked in the discussion of the more technical questions of legislation in which this association is interested.

Those composing the great army of persons directly engaged in the woolen industry and in occupations dependent upon that industry, are not in any separate or special way beneficiaries of the government. They labor as honestly, as diligently, and risk as much as do their fellow citizens in like stations in other avocations; and they share with the whole people whatever benefits flow from legislation enacted for the purpose of building up the domestic woolen industry.

The business is not a close corporation; it is equally open to every one, and in rank and file it offers opportunity for every kind of capacity and training.

Moreover, all these hundreds of thousands of our fellow workers are withdrawn from competing for place in other employments.

Suppose for a moment that wool manufacturing had never been established in the United States—and it could never have been esatblished and developed here but for the existence of a protective tariff.

Those now engaged in it would not be without employment. They would have contested for the places now filled by many men who think themselves in no wise concerned with the tariff except as consumers. Those in our ranks would have found their way into all the activities of life. They would have become doctors, lawyers, engineers, preachers, bankers, railway officials and employes, merchants, farmers, salesmen, clerks, mechanics of all kinds, day laborers, editors, magazine writers, perhaps even members of Congress; and I fear there would have been a few, just a very few, "insurgents."

This illustrates one of the fundamental reasons justifying the protective policy—namely, the diversification of industry for the greater prosperity of the whole people. And has any other country, new or old, with or without natural resources, so abundantly justified that policy by the almost universal diffusion of prosperity?

Those engaged in the woolen industry ask no special privilege, seek no advantage but that of equal opportunity, neither possess nor desire any beneficence of government that is not freely available to all citizens. They are in no sense beneficiaries of the tariff except as they share the benefits for the common advantage of all.

There are no mysteries about the conduct of the woolen industry; every essential fact is accessible.

It invites the most searching investigation and comparison as to the returns it makes to capital, the wages of its labor, the acuteness of its competition, and the facility with which those of limited financial resource can engage init s various branches under conditions favorable to success.

It depends upon no secret processes, no controlled patent rights, nor upon exclusive franchises.

In no branch of the woolen business, from the production of the wool to the distribution of the finished clothing, is there any trust or combination in restraint of trade. No individual, nor corporation, nor group of either, exercises a controlling influence in the industry. Indeed, sometimes we might well wish for some steadying influence in the times that try men's souls, just as the banks have their clearing houses which in seasons of panic regulate the conditions under which their business shall be done.

Nor do we know of any instance in which our trade has been concerned in violations of the Federal laws relating to interstate commerce.

And, although the transactions of the American woolen manufacturers with the United States Customs House involve amounts of great magnitude, they have been singularly free from even the suspicion of undervaluation frauds.

It is noteworthy that none of the great accumulations of wealth in this country have been made in the woolen trade.

At the same time, not a few respectable competences have been dissipated in the field of our endeavor.

The products of the woolen industry are not transported at government expense. Its properties are not improved and enhanced in value by expenditures of public funds. It is not assisted in the solution of its technical problems by experiment stations and research laboratories conducted by the national or State government. All of which advantages are enjoyed by one or another of other classes of our fellow citizens.

Believing in the system of protection for the good of the whole people, the woolen manufacturers cheerfully acquiesce in the application of that principle to the raw material they use. They have not presented the spectacle of advocating adequate protection on their finished products while opposing such rates on the products of others which they require.

One of our ablest and brightest members recently remarked that "ours is a business in which, once entered, one has a life sentence," and the sentence is to hard labor, unremitting toil and ceaseless anxiety.

Though of excitement there is no lack, for to quote the opinion of another dear victim: "No one who buys or manufactures wool has need of other outlet for his speculative instinct. He has no excuse for toying with Wall Street, or playing the races, or staking his money at games of

chance; for he should be able to fully satisfy any gambling propensities he may have in the wonderful chances the business presents."

Address of Charles H. Harding.

Charles H. Harding, of the Erben-Harding Co., Philadelphia, and one of the vice-presidents of the Association, spoke as follows:

Mr. President, Guests and Fellow Members of the Association:—You have set me the task of defending you against the violent attacks and false accusations that for two years have held you up as proper objects of the contempt and hatred of your honest and virtuous countrymen, because of your attitude and actions in the matter of the tariff, and this involves some defense of the woolen schedule.

Only a hasty look into our past, our present and our future can be allowed now, and that can be but a suggestive outline with little extended argument, as I must not be in the way of our distinguished guests.

The gravity of the charges against your past lies in the allegation that there have been conspiracies against the public welfare and the public pocket, to which this association was a party, and that the specially criminal were the manufacturers of worsteds, the rest of you being led or duped by them; and that all the members of both houses of Congress who have framed, defended or acquiesced in passing the woolen schedule in its protective forms have been likewise deceived or ignorant.

The proportions of this assumption are astounding, as is also its hold on the popular mind. The first conspiracy, it is alleged, was begun in 1865, when a committee from this association, with one from the National Association of Wool Growers, spent six months in Syracuse, Boston, New York and Washington in preparing the framework of principles embodied in every form of schedule K since that time; months afterward their report to a government commission became the basis of a new law.

Their classification of wools, not by "use," but by "blood," was almost an inspiration, and has saved the trade and the government from endless confusion and litigation, consequent upon the continual changes brought about by improvements in methods and machinery that enlarged the scope of "use" of wools for purposes and in ways then unknown.

Their recital of breeds of sheep whose wool was included in class 2 (combing wools) was based on a situation that knew practically but the now obsolete combing machine, that could handle only long fibers; the Noble comb was not fairly established, and the French comb, dealing with the very short fiber, had not then been invented. The main sources of supply for the combing industry, established in the country less than ten years beforehand, were Great Britain and Canada, whose wools were then always marketed in a washed condition; and this accounts for the exceptional dealing with washed wools in class 2; but the short wools, the pulled wools, and any other wools of the class fitted for the cards of that time shared with the long wools the privilege of entry as washed wools, without double duty, as they have done ever since.

Worsted yarns were used for shawls, reps (in upholstery), dress goods (delaines, poplins and the like), and for hand knitting in common with woolen yarns, knitted underwear being almost unknown. Not a yard of worsteds for men's wear had been put on the market, these fabrics being first made in notable quantity about 1873 and receiving their first public recognition from the very beautiful display at the Centennial Exposition of 1876. Not only were shorter fibered wools of class 2 then, as now, available for carding as for combing purposes, but the market price of competing wools from the middle West gradually came to be regulated not by them but by the crossbred wools of Australia, New Zealand and South America, all of which must be imported "in the grease" as of class 1 of clothing wools. But the trade language of today uses the name "combing wool" for all wools of class 2 and class 1 that can be used on any form of combing machinery, and this includes nearly all the wool grown in the world.

The second conspiracy is said to have been between you and the wool growers in October, 1908, at Chicago. These are the facts: The wool growers remembered their experience at the adoption of the Dingley tariff. Certain manufacturers went to Washington when the bill was in preparation, strongly in favor of a duty of 8 cents on wool in the grease, with the washed and scoured rates on that basis; this was not the action of your association, however, who believed then as always that the duty on wool is a matter to be settled by Congress, on information as to the cost of production, to be furnished by the growers. The growers came here, smarting under their fearful losses in flocks and in money from the operations of the "free wool" tariff, and claimed that 13 cents was the figure that was safe on unwashed wool. Long and sometimes acrid were the conferences that resulted in the agreement on 11 cents as a fair basis. When, in 1908, the platforms of both parties forecast tariff changes, the growers heard of some individual manufacturers as favoring lower rates on wool, and wrote to know what your association would say in the matter. Meantime, the influential body known as the American Association of Woolen and Worsted Manufacturers had been formed for the correction of trade evils, and many of them were members of your body; their president was in correspondence with your office, and wrote finally: "Our association has felt that the interests of the woolen industry in tariff matters have always been so ably looked after by the officials of the National Association of Wool Manufacturers that we have been disinclined to take any steps with regard to the subject which might seem to encroach upon the field of work which the older association has made so distinctly its own.

"We shall, however, be very glad to cooperate with you."

The answer to the growers was that our association had no intention of taking any action in regard to the duty on wool. As they were to

have a meeting of their officers and a committee in Chicago in furtherance of their project of selling their wools from a central depot there, they asked for a conference on Oct. 18, which was had; the resolutions passed by the joint committee declared against any reduction of the duties on wool or woolens and were handed by the secretaries of the two associations, on the assembling of Congress, to the chairman of the Committee on Ways and Means.

There was no conspiracy and no attempt at secrecy; but, happening, as it did, within two weeks of the Presidential election, the meeting did get the attention of the newspapers. But there shortly arose a cry that was echoed in the newspapers, the cheap magazines and the halls of Congress, that as the result of these two conspiracies a great and glaring injustice was being done to the makers of carded yarn from wool, and through them to the wearers of the cheaper grades of clothing, and protests were begun and still go on against the continuance of the wool duties of the Dingley act, in the new law.

That the alleged "iniquities and inequalities" had slept so long without notice is extraordinary; and so is the credence they have gained when they are so utterly baseless as to facts. The claim as stated is that the maker of carded yarns is deprived by the duty of the heavy shrinking wools which he needs, while the maker of worsted has access to light shrinking wools which the former cannot get. Now, every grower of wool knows that where the long fibered (or worsted) wool in a flock is of light shrinkage, so is the short fibered (or clothing) wool. Every importer of foreign wools will testify that where parcels of combing wool are offered for sale parcels of clothing wool are offered from the same clips; if the one is heavy, so is the other; and if either is light, so are both; and will testify that there is no discrimination. Very heavy wools are inaccessible to both carder and comber, but the light shrinking clips the world over are as available to one as to the other.

A little examination of the facts will show why, even with wool free, these very heavy wools may not be profitably imported. Suppose a buyer in Australia finds a wool he can buy at 15 pence (30 cents) shrinking 42 per cent.; this would mean 50 cents for the pound of scoured wool. A similar wool in all respects, but of the heavy shrinking type, say 74 per cent., must be bought for 7 pence (14 cents) to come in at the same scoured cost (50 cents). If this can be done, there remains to be considered the cost of importing in each case and its effect on the scoured cost per pound as the basis of figuring for the cost of wool in any and all its products is the scoured pound. The weighting, shipping, brokerages, banking commissions, freight, insurance, custom house expenses and, maybe, on the grease pound of the heavy (74 per cent.) wool about 4 cents, which means on the scoured pound 14.3 cents, while the same charges on the light (42 per cent.) wool, though increased possibly to 5 cents on the grease pound by reason of its higher first cost increasing the charges made in percentages, will, on the scoured pound, amount to but 8.6 cents. The buyer can therefore raise his bid on the light shrinking wool, part of the difference.

It is at once plain that even with free wool the American buyer will seek the light shrinking wool for importation, and also how it has come about that the best and lightest wools long ago came to be known as "wools unsuitable for America."

This situation is incident to the application of all specific duties, and can only be overcome by establishing varied bases for the application of the duty; the alternatives will be considered later.

But this suggests an inquiry into the use of specific duties by other nations, and it then appears that this is the only civilized nation whose customs duties are not all specific, practically. In Austria, Switzerland, Italy, Belgium, France, Germany and England the duties are specific. The French tariff has 800 "numbers," of which nine are ad valorem; the German has 946 "numbers," all specific; this country has 481 paragraphs on dutiable articles, of which 202 have ad valorem rates; Great Britain raises nearly one-fourth of her revenue through her custom houses, and entirely by specific duties. Her celebrated laws for summary dealing with undervaluations " Statutes 16 and 17, Victoria, chapter 107, section 57." which dealt with an invoice suspected of being undervalued by adding 5 per cent. to the invoice, paying the owner of the goods, taking them and selling them for account of the crown. This noted method of drastic action is, however, obsolete, for Great Britain has no ad valorem duties. In our own tariff, great advances have been made in this direction in the cotton and silk schedules, but we have never been able to secure attention to the woolen tariffs in this way.

On yarns made of wool (carded and combed being separated), the French tariff has 68 specifications, and yarns with other fibers mixed are dutiable "as of pure wool;" the German tariff has 19 specifications; our tariff has one paragraph, in which are two divisions, with no attempt at giving the cheaper carded yarn any lower duty than that on the more expensive worsetd yarns. We have asked for change in this regard that will approach the practice of other civilized countries, but so far without result.

Another accusation against us and the woolen duties of the present tariff is that the cost of clothing has been raised. This is in face of the fact that the new Payne-Aldrich law did not increase the duty on a single item of wool manufactures over what it had been throughout the 12 previous years; the few changes made from the duties of the Dingley law being slight reductions. On June 30, 1909, the National Association of Clothing Manufacturers issued the following: "As the schedule covering this industry has been adopted by the Senate committee of the whole, and as it is practically a continuation of the old Dingley schedule, the N. A. C. M. feel that they must file their protest before the adoption by the Senate. The operations of the Dingley (?) bill will add to the retail price approximately $2.50 on a $10 suit of clothes, $3 on a $15 suit and $5 on a $20 suit, or from 20 to 25 per cent. to the cost of the clothing to the wearer thereof."

This was notwithstanding the fact that the entire cost of the cloth in suits of these respective

prices is not equal to the alleged increase in price of the suits, and notwithstanding the fact also that there was no increase of duties on wool or woolens.

If some one will take up again the specific duties offered in the past for tops and yarn, following the French tariff or our own for silk and cotton, I am sure you will do all you can in aid of its perfection, and will be glad to see the plan carried out for cloths, carpets and clothing. If it once for all does away with ad valorem duties, and arranges a sufficient number of safe "steps" in the specific duties, you will be content to see no more of the absurd "ad valorem equivalents" that are hurled at you constantly. But with the detached kindergarten propositions that are put off, often in high position, it is difficult to have any patience. One is the ad valorem duty on wool in the grease, which certainly looks well on paper; but its advocates have generally no experience in importing wool, and make claims as to the possibility of its adequate collection that are absurd. No one has disposed of these claims better than Chairman Payne in the epigram: "The ad valorem duty on wool is a very beautiful thing until you start to collect it." Another is the proposal to arrange a scale of duties on scoured wool, with intervals of 5 per cent. between them, a few cents to be added at each 5 per cent., but on this plan the changes in the weather might change the duty on a lot of wool from day to day.

From questions asked me lately by an officer of the custom house, I think some statesman contemplates making wool dutiable on "the conditioned basis;" that is, depending on the amount of moisture it contains. Now, conditioning houses after the foreign plan would be a very good thing, and are already in use with many of us; but their use is confined to scoured wool and its products.

Another proposes to us the panacea of free raw materials. Now, that was tried on us once, and we all had enough of that one trial.

But while it is thus seen that much of the criticism from which we suffer is based on ignorance, it is also evident that the appeals to passion have brought about a state of scornful hatred, which demands that something shall be done. This condition was one of the principal factors in the recent political overturn.

The question remaining is, Who is to do it? A board, a commission or a new Committee of Ways and Means? If the board or commission were appointed on the same grounds as the French commission, or were composed—as was the late German commission, so long and loudly held up to us as a model—we might safely trust their work and their recommendations. Of the French, we read in the preface to the translations of the new tariff: "The 1910 tariff was not a government measure. The demand for revision came primarily from the manufacturers, who felt that, in view of changes in industrial methods and of higher customs duties in competing countries, they had come to need increased protection. The essential industrial character of the revision is disclosed by the fact that out of 144 new items inserted, 112 covered manufactured articles, while of the 341 amended items, manufacturers represented 249." One of the members of the German commission, now a manufacturer in this country, writes me: "The German commission consisted of several hundred members, representative of the principal agricultural, industrial and commercial organizations of the country, the first of whom were appointed about 1899. Some of the members were appointed by the government direct, others were appointed by the government after being nominated by the various semi-official organizations, such as the Chamber of Commerce, etc." And he adds, "a similarly constituted commission representative of all interests, would, in my opinion, be very advantageous to the United States."

There is a way to get real experts. This association is not in opposition to the creation of a commission; but has offered to the present Tariff Board its best efforts in furnishing information, and to open mills to their visits, that they may get facts in full detail and with all possible accuracy.

One other matter—your relation to the public. A grave charge is here laid against you, of having increased the cost of living. Before mentioning one or two details in this connection, I wish to say that for years you have contributed toward making Americans the best dressed people on the face of the earth. Aside from the luxurious rich, all classes of people in all other places are more poorly clothed than are the American people in the same walks of life. See the people in tatters coming from the mills in France. See the barefooted girls preparing wool for the sorters in Germany. See the workwomen and workmen from the English mills on Sundays in their very best, then meet your own people going from the mills and then meet them on a Saturday afternoon or a holiday, and you may be proud that you furnish the American public with their woolen wear.

I say you are not a "horrible example" of the special protected interests, and I will promise for you that, without the force of legal process to compel your attendance, you will be present whenever wanted to tell all you know, under oath or otherwise, about cost of manufacturing, both here and abroad, for some of you worked or carried on business abroad, and others have copies of wages lists from mills abroad; and most of us have been on the wage rolls of the mills with which we are connected. And doing this, we will only do what we have always done.

Mr. Harding told a story of a man who, at the time of the free wool agitation a number of years ago, desired to find out just what the cost was of cloth necessary to make a suit of clothes. He bought the yarn made from wool similar to what he had grown himself, had it dyed and made into cloth at his own expense, and found that the total cost of the 3 3/8 yards of cloth necessary for a suit of clothes was $3.80. When he went to have his suit made by a tailor he found one after some difficulty who would make it for $22, which convinced him that the charges paid by the consumer to the manufacturer are relatively small compared with the very much larger amount taken by the tailor or clothier and the middleman. (This

object lesson was emphasized to the diners of the evening by a little souvenir of cloth samples at each plate.)

Address of William M. Wood.

It has recently been stated in the public prints that there was a controversy between the carded woolen manufacturers and the worsted manufacturers of this country over schedule K. I positively deny that there is any controversy between the carded woolen manufacturers as a whole and the worsted manufacturers. From all that I can learn, the so-called Carded Woolen Association is composed of a group of small and relatively insignificant mills whose aggregate machinery I believe to be no larger than one-half of the carded woolen division in my corporation.

I do not brush these mills aside as inconsequential, because, although they may appear so to a larger unit, to the owners of these mills themselves their business may mean all they have on earth, and they are therefore entitled to the full justice that is meted out to any body of manufacturers, large or small. Indeed, I believe that the weaker and poorer a man is the more he is entitled to patience and consideration.

I claim the contentions which the Carded Woolen Association makes are absolutely groundless. I claim that its representatives have started upon wrong premises in the argument and therefore have reached wrong conclusions. Speaking both as the largest carded woolen manufacturer in America—and, I think, in the world—and as a worsted manufacturer of the same comparative size, there is absolutely no discrimination whatever against the carded woolen interests in the wool and woolen schedule, as compared with the worsted manufacturing interest. If it could be said that there was any discrimination at all between the two industries, the carded woolen manufacturer is really being favored. He can import any and all wools that the worsted manufacturer can import, and the worsted manufacturer can import any and all wools that the carded woolen manufacturer can import. Both would like to bring in heavy shrinking wools from which they are debarred, but the wool growers of the West consider that unfair.

I say this subject to being wrong, that this group of carded woolen men are not in the general sense users of wool to any great extent. Their raw material consists mostly of shoddy, made from rags, old and new, and from wastes and the by-products of worsted mills. Some of them use fleece wool. It would be interesting to know how much they use, and I think it would be found surprisingly small.

Worsted manufacturers can use only straight fleece wools from the sheep's back, and cannot and do not use wastes, shoddies, or adulterants of any kind whatever. Worsted goods are made from straight, clean, pure wool without manipulation of any kind. When I am buying wools in London or Melbourne, on account of the specific duty, I naturally seek for the light shrinkage wools. Any carded woolen manufacturer has the same privilege. He uses his wool closer and does not have to figure the question of noils, which are the short combings from the fleece and which the worsted manufacturer cannot use. For these noils or short wool he pays the full price as though it were long fleece wool suitable for his use. He is obliged to sell it at a loss from that price—50 per cent. more or less. The carded woolen manufacturer can use that product, but not altogether, and in the case of the American Woolen Co., we offer for sale in the open market these very noils and waste products of our mills, and so do all the other manufacturers, and very often they become a glut in the market—all to the advantage of the carded woolen manufacturer and to the loss of the worsted manufacturer.

Schedule K, much maligned, much misunderstood, if properly understood would be the most appreciated of any schedule in the tariff; and if all schedules in the tariff were as scientifically based and as well poised and balanced as Schedule K, it would be the most remarkable document, next to the Constitution of the United States, that the human mind has ever produced. Schedule K protects labor in the woolen and worsted mills of this country. It gives them the market up to a certain point—mind you, up to a certain point. Beyond that, as has already been shown, foreign goods can enter this market and have done so, and did so last year to the extent, by American valuation, of $45,000,000 of manufactures of wool. In addition to this, there have been heavy importations of the raw material, which have netted the government an annual revenue of more than $20,000,000.

Surely Schedule K ought to be regarded favorably by the American people. It protects the labor of the employes in the woolen industry; it contributes largely to the revenues of the country—its proper share; and it admits foreign manufactures of wool. What more could be hoped for?

Are these manufacturers so protected that they become creatures of inordinate wealth? You can count upon the fingers of one hand the wealthy woolen manufacturers of America. I know of no one in the woolen business who has retired because of wealth. The margins of profit are so close in this business that the conduct of the business might be compared with farming in New England as against that in the West. A successful farmer in New England must make his living right from the rocky, sterile soil with his knuckles, whereas the great fertile West produces abundantly and easily. The woolen manufacturers' competition at home is so great and the risks of the business are so great that his margin is as that of the New England farmer.

A suit of clothes bought for the President of the United States yields a profit to the man who made the cloth of not over 38 cents on that suit, and these figures have been challenged by manufacturers from Pennsylvania, who have stated to me that their profit was less than half of that. I have seen overcoats made from the cloth of my own mills, overcoats for boys, on which the net profit to us was less than nine cents. I merely mention these figures to show you how closely fought the woolen manufacturing business is, and that the high price of clothing is not due to the tariff nor yet to the manufacturer, but to the middle man whose expenses are very great, and to

the retailer, who also has large expenses to meet in the way of rentals and much advertising in the newspapers of the country.

As vice-president of this association, I wish to take this occasion to express my deep personal respect and high regard for the distinguished services of our retiring president, a man only in middle life but with heavy business cares. It is right and wise that he should relinquish the duties of this position in the interest of his own health. Our sympathy, our pity, if it should be expressed, should be to the incoming president, who has this high standard that has been set to live up to, and he must take the flag and go onward and upward. I congratulate the retiring president, and I also extend my felicitations and congratulations to our president.

Senator Warren's Speech.

Senator Warren said in part:

Whenever and wherever wool growers and wool manufacturers assemble a tariff discussion is immediately "on," it being claimed by both industries that the tariff should be protective, and adequately so, if they are to survive and continue in generous financial support of the Government.

Since the woolen industry stands second in the amount of revenue afforded the Government, according to the latest printed report of the Bureau of Statistics, it does not require any apology on the score of its returns for the support of the nation.

And about $400,000,000 represent the wool duties collected in the past 15 years.

The proof thus submitted settles affirmatively and with emphasis the revenue side of the equation.

Now as to the protective features: A study of the question convinces anyone who gives it serious, continuous thought, that Schedule K protection really reaches far outside and beyond the mere production of "raw wool," so called, and the manufacture of woolen products.

While wool growers and wool manufacturers are sometimes in harmony and often in hostile attitude, yet the fact remains that wool and woolens are so associated in the tariff that we cannot dodge, if we would, the fact of their relevancy one to the other in considering these industries.

The wool manufacturer would be greatly hampered without wool grown in this country and dependent entirely, or nearly so, upon foreign countries. It would be a sad condition, indeed, for our country, and especially in time of war, if we were dependent upon foreign countries for that most needed, if contraband, article—wool for clothing —which, next to food, is most important.

On the other hand, the wool grower, without the market afforded him by American manufacturers, would have but an indifferent and unstable market with starvation prices for his product. Even as it is, and as things are under our present tariff law, manufacturers must be up-to-date, alert to business and possessed of sufficient capital and modern plants, to meet foreign competition and afford the American wool grower a market bringing anything like an adequate price.

So, quarrel as we may, wool growers and manufacturers are really like partners, divorce not practicable regardless of incompatibility of temper; and while offensive and defensive relations and alliances may exist, yet the fact remains that we inevitably stand or fall together.

In my opinion the United States Congress is better fitted to frame a just tariff law than any other organization. The members are the responsive representatives of the industries of the company and quick to act for what it is believed are the best interests and for the welfare of the community each represents. Yet no part of this great country is disinterested in tariff legislation. And Congress, in theory and in fact, so far as tariff legislation is concerned, is the legitimate, direct voice of the people.

Nevertheless, I observe with satisfaction that those who have been intrusted with this work of tariff investigation now going on have, during the past season, commenced a line of research among the wool growers, and if they have not yet commenced among the manufacturers I trust they may not fail to reach them in due time; and my advice to both growers and manufacturers is, throw everything wide open for their examination. The truth, if the whole truth, is good enough for wool growers, and I indulge the hope and confidence that this must be relatively true with the manufacturers.

You who are manufacturers, discard all little fibs and fallacies, if such have prevailed in interviews heretofore, and permit the agent to examine your books and works—confidentially, of course—and let the whole process pass before him, from the raw wool to the final net returns on the product sold. Drop the retailing of such little fibs as that which has been reiterated over and over again by some wool dealers and some manufacturers, more especially carpet men—that we do not grow any carpet wools in the United States; that the wool which we import under the heading "third-class" is for carpet manufacturing only; that no part of the imported "third-class" goes into fabrics other than carpets, and hence there should be no duty on "third-class," and so forth.

The wool grower knows better. He knows that we do grow, in parts of the United States, some carpet wool, although, as a matter of fact, it is entirely immaterial whether we do or not, because for every pound of imported so-called carpet wool, third-class, that is used for clothing, blankets, or other purposes, that same quantity of higher grade wool which we raise is displaced; and, for that matter, every pound that is imported and used for carpets outright, displaces a pound of our wool that would otherwise be used for carpets.

Furthermore—and I make no complaint—carpets are the most and best protected manufactures under the schedule, so let us "fess up" and no longer ask for free third-class wool.

The United States consumes far more wool than any other nation in the world.

People differ widely sometimes in computing wool statistics because of the difference between grease and scoured wool; but the figures I have

given represent quantities computed in the usual and accepted way.

Shall we then lose our sheep through failure to properly protect, and rely solely on foreign countries for our wool supply? If so, how long will it be after our sheep are gone before the foreigner will raise the price, send us cloth instead of wool, and leave our labor unemployed and our factories standing idle as monuments to our folly?

I have heard the specious arguments advanced that we could prevent this kind of a happening by raising, considerably, the tariff on coarse wools, supposed to grow on mutton sheep, and reducing the tariff on fine wools, and thereby greatly increase our mutton product in this country and depend upon the foreign countries for our wool, where it is alleged they are bound to grow, for centuries to come, finer grades.

Well, gentlemen, upon what experience, upon what history of the past, upon what tendency of the present, can we expect a result of this kind in the future.

First, we must chalk down the fact that practically there is no longer an extensive public domain for grazing purposes. It has been so generally absorbed that what is left is largely either in the forest, the "bad lands," the rocky regions of the mountains, or the frazzled edges and isolated patches that fill in the ground work of the map, spotted over with homesteaders and farmers who have absorbed the water and watering places in the arid region and almost, or quite, the entire territory outside those regions.

Whereas a few years ago we were exporting millions upon millions of bushels of wheat, we now find ourselves in danger of becoming considerable importers in order to provide for the growth of our population from natural causes and immigration.

We have been making great efforts to reduce our imports of sugar and sugar beets grow now where sheep grazed before. And so on, as to corn, potatoes, and other crops, all of which are more profitable than sheep under present conditions and state of public mind.

Go, if you please, to the other countries; the British Isles, for instance, where they raise a superior class of mutton. There wool growing is not engaged in as a business, but wool is a by-product; and the sheep grown there form only a part of the mutton supplied for home consumption.

At this late date in my life, after having been interested in sheep raising since my earliest remembrances—born, as I was, in a factory village in Massachusetts where wool was both grown and manufactured—and after having 40 years' experience in wool growing in the Rocky Mountain country, to my mind it is not so much a question why we have not increased our flocks more than we have, as it is why they have not decreased with free wool at one time and under numerous tariff changes and continual fear of the future.

It has also been my observation that wool manufactures have languished, and idle mills have been in evidence, and the wool growers' market nearly or quite destroyed, whenever the tariff on wool manufactures has been less than at present.

And I give you my solemn assurance that I believe as firmly as I believe that night follows day and day follows night, that the sheep growers of this country cannot successfully continue their business with less protection than Schedule K affords them, however you may change or regulate it, and that if any changes are to be made to meet existing or altered conditions or circumstances, if terms or rates relative to the imposition of the tariff are to be made different, they must not be lessened and ought to be increased in the net clear to the wool grower if we are to have uninterrupted continuance of that industry beyond the keeping of a few straggling bunches of mutton sheep, as now kept in New England and the Middle States where wool is a by-product and early lambs and high-priced mutton are the incentives to sheep raising, and where formerly large flocks of merino and other well-wooled sheep were grown for their wool production.

Speaker Cannon's Speech.

Speaker Cannon, in the course of his remarks, said:

In a month's time we will be called upon to enact the reciprocity agreement with Canada into a law; but I don't know what we are going to do with it—we will only have to come to a compromise that cares for the industries of all our people.

I am not a schedule sharp. I wouldn't know a schedule if I saw it on the street; but I have been in Congress forty years getting experience about revenue legislation. I have followed it from the committee assignments through all its processes, and if anybody lives who thinks a person can memorize the whole thing, he is sadly mistaken.

In the making of the Aldrich-Payne law I followed Payne. I followed the committee of the House, and I followed it when compromise was effected. It was not a perfect bill. But I followed President Taft too, and believe with him that it was by far the best revenue law made in the history of the American people.

Through all the criticism which has been heaped upon it I have stood by it. I have said that it was right. I have not apologized for it in any respect.

If there is a weakness among the friends of protection and in the protective policy, it is that we are trimming our sails to satisfy the dissatisfied, and if you satisfy them today, you will find them doubly dissatisfied tomorrow. They will only learn through their stomachs what they cannot learn through their heads.

The people have given the Democrats a majority of 67 in the next House and they have made great gains in the Senate. God knows, I don't, what Champ Clark—booted and spurred—I have great respect for him, but he does not represent the same school of thought that I do—when Champ Clark sends a bill to the Senate, I really don't know what the Senate is going to do with it.

After all, they'll only have to come to a compromise that cares for the industry of all our peoples.

The Constitution of the United States says rev-

enue bills shall originate in the House and that the President should make treaties with the consent of the Senate. We've lately had sent to Congress a commercial agreement in name, but a treaty in reality, yet one that goes primarily to the House. It may be wise and it may be not. In a month's time we will be called upon to enact it into law. I don't know what we are going to do with it.

Ask the fruit growers of California what they are going to do when Canadian fruits are free. What can they do under the favored nation clause? Where's your protection if the hogs and cattle come in free? And what answer are we to give to one-third of the population of the country—the farmers?

They'll only come to a compromise after all. With all the work before the Congress, I do not believe that by legislation originating in the House and amended in the Senate we can do so great a work in the double somersault and hop-skip-and-jump fashion as is expected of us.

Senator Lodge's Speech.

Senator Lodge, who was called on about midnight, spoke very briefly, confining himself almost wholly to a commendation of the Tariff Board. "I am shocked," said Senator Lodge, "to find myself in an audience who do not recognize one who voted for Schedule K as an outcast. The most severe criticisms I had to meet in the recent little contest in Massachusetts had reference to a branch of your industry. I was converted to the need of the Tariff Commission by my experience in the making of the last tariff bill. I have been through five tariff revisions but never took an active part except in the last bill. It then became clear to me what a great advantage it would be if we could have information from experts in whom the people had confidence. I am a protectionist and I believe nothing would insure the stability of protection so much as bringing the facts before the people of the country. We have had to depend on the information of correspondents and the testimony given by producers and importers who wanted raw materials made free when they were the finished product of someone else. If we can so gather that information that it will carry conviction to the people of the country, it will be the best guarantee of safety that the protective system can have. I am much pleased to hear Mr. Harding's suggestion that you open your books to the people and show them what the costs are. When they are assured that the duty does not more than cover the difference in cost and a fair profit, they will overwhelmingly stand by you. The standard of wages in this country is higher than anywhere else in the world. It cannot be maintained without protective tariff. That is the whole of protection as I see it."

Chairman Emery of the Tariff Board rose in response to the general desire that he should be heard from and took the opportunity to thank the association for the opportunity to be present and to say a few words bearing on the bitterness and antagonism which has unfortunately characterized the controversy of the wool schedule. Mr. Emery said:

Mr. Emery's Speech.

I will simply say this one thing, without going into details, that frankly many things are said about you gentlemen by all kinds of people, which we know to be absolute rot. We want to be perfectly reasonable. On the other hand there are all kinds of things said about other people that are not so. There are all kinds of insinuations made about other people's motives. Those insinuations are made about your motives. It is assumed by some people that anybody who gives any credit to any statement of a woolen or worsted manufacturer who is interested in Schedule K must have the wool pulled over his eyes, that he cannot be an honest man if he listens to anything that these people say. Why can we not recognize on all sides that it is not worth while to continue this back-biting, this insinuation, this attempt to hit the other fellow somewhere, in order to make him the goat, because he happens to be willing to listen to somebody whom the other person does not like. It seems to me that we can play the game in a perfectly fair way, that everybody ought to recognize it, that anybody in public life is bound to listen to the fair statement of anybody else; and if that person is not making a fair statement, it is proper to check it up, to find out from somebody else why it is not fair and wherein it is misleading and misguiding, and it seems to me that we can eliminate a great deal of all this ill-feeling to which I have referred. Let us forget the magazines, let us forget the papers. Let us get down to brass tacks and cases, where everybody deals with everybody else in a perfectly fair spirit, and recognizes that the motives of the other man are decent and honest.

As far as the tariff board is concerned, we recognize with perfect equanimity that we are going to get it any way. We feel perfectly certain that whatever we report as facts will not seem to certain people to be facts; because it is very hard for a man to see facts which may not exactly fit his particular and immediate needs. We want to be checked up on our facts. We recognize that our spectacles may be colored, and when they are colored we want to know it, and we want to know it from the men who know the facts. We want to know it from the men in the business. They are the men who know what they are talking about. As I have said before, you cannot go to a university to get facts about a business. You cannot go to a barber shop to get facts about a business.

An interesting and appropriate dinner souvenir consisted in a little case placed at each plate bearing the legend, "American cloth for American clothes." This little sample case contained four samples of men's wear, each tagged with the price

per yard and the cost of the cloth necessary for a suit of clothes, 3 1/2 yards. The samples included a carded wool fabric at $1.12 1/2 a yard, or $3.93 for the suit piece. A gray worsted fabric was priced at $1.22 1/2 a yard or $4.20 for the suit. A blue worsted serge was priced at $1.25 a yard, or $4.38 for the pattern. These goods were stated to be all wool and such as the average man would select for a suit of clothes which would cost from $15 to $50, according to the character of the tailoring. This object lesson was to show that in such goods as these the wool duties play a very small part in the cost of men's clothing for the consumer.

Conference of Cotton Manufacturers.

As the outcome of a meeting in October between the officers of the National Association of Cotton Manufacturers and the officers of the American Cotton Manufacturers' Association, a conference was held on Feb. 2d in Washington between delegates invited from these associations, the Arkwright Club and the Farmers' Educational and Cooperative Union. Among those attending the conference were the following:

Representing the National Association of Cotton Manufacturers: Franklin W. Hobbs, Boston; George Otis Draper, New York; Edwin Farnham Greene, Boston; Robert Beatty, Philadelphia; Albert F. Bemis, Boston; Frederick F. Flather, Lowell; George P. Grant, Jr., Fitchburg; Russell B. Lowe, Fitchburg; Frederick B. Macy, New Bedford; Joseph Merriam, Middletown, Conn.; R. M. Miller, Jr., Charlotte, N. C., and C. J. H. Woodbury, secretary, of Boston.

Committee representing the Arkwright Club: John W. Knowles, New Bedford, Mass.; Herbert Lyman, Boston, Mass.; W. S. Shove, Fall River, Mass.; Edwin Farnham Greene, Boston, Mass.

Committee representing the American Association of Cotton Manufacturers: D. Y. Cooper, president, Henderson, N. C.; E. A. Smyth, Greenville, S. C.; C. B. Bryant, secretary, Charlotte, N. C.; Aug. W. Smith, Spartanburg, S. C.; W. A. Erwin, Durham, N. C.; Ridley Watts, New York, N. Y.; C. H. Moody, Alabama City, Ala.; J. C. Rankin, Lowell, N. C.; L. D. Tyson, Knoxville, Tenn.; C. D. Tuller, Atlanta, Ga.; W. H. Harriss, Pawtucket, R. I.; W. E. Beattie, Greenville, S. C., and J. P. Eddy, Providence, R. I.

Other guests included Lewis W. Parker, Secretary, Frank E. Dunbar, R. S. Reinhardt and N. A. Cobb.

Preceding the conference the delegates called at the White House to pay their respects to President Taft.

Franklin W. Hobbs, of Boston, president of the National Association of Cotton Manufacturers, outlined the object of the conference in the opening address in which he welcomed the delegates.

President Hobb's Speech.

In behalf of the National Association of Cotton Manufacturers, it gives me much pleasure to welcome you here today and to express the hope that our meeting may be not only agreeable but profitable to the great industries which we represent; whether they be agricultural or manufacturing, for the interests of all are identical, and, in the long run prosperity for one means prosperity for all. In this country no one industry or class of people can prosper without general prosperity. It is equally true that no one class can suffer adversity without bringing about in the end general adversity. It is well, I think, for us all to bear in mind this great truth and to realize that no sectional legislation, no special legislation, can ultimately be successful even for the section it was intended to benefit. Rather let us always remember, with a broad, generous spirit, that every business is so closely interdependent on every other business that we must stand or fall together, and to us, as to Henry Clay over sixty years ago, there should be "no South, no North, no East, no West."

In order that you may better understand why we are gathered here today, I may briefly state the reasons. On Oct. 19, 1910, at the request of the officers of the National Association of Cotton Manufacturers the officers of the American Cotton Manufacturers' Association dined with the former at the Engineers' Club in New York, and at that time I stated that "there is so much in common in the purposes of the two organizations here represented by their officers that it appears as if the interests of the cotton manufacture would be enhanced by coincident although independent lines of policy, and such uniformity of action would have the greater force through the logic of numbers." An informal and interesting discussion was held, and at that time it was stated that it was intended to call another conference a little later in Washington and to invite in addition to those mentioned, representatives of the growers of cotton. So, gentlemen, we are here today to meet each other in a friendly way, to confer on various matters, to exchange views on subjects of vital interest to each one of us.

and I hope as a result we may help each other in solving these great questions and thus bring about a better understanding and a better condition in our industry.

With this preliminary statement as to the object of the meeting, and with the idea of putting before you certain matters which seem to me of vital interest to all, I suggest the following subjects for consideration:

1. "Ginning of Cotton."
2. "Baling of Cotton."
3. "Bills of Lading."
4. "Standard Samples."
5. "Buying of Cotton."
6. "Sales Contracts."
7. "Warehouse Certificate Scheme."
8. "Demurrage."
9. "Forest Conservation at Headwaters of Rivers on the Appalachian and White Mountain Ranges."

Before taking up the various matters for discussion I think we may well consider briefly the great importance of our industries and the influence they have on the welfare of the country. Turning first to the raw material we find that, while cotton has been grown from time immemorial in India, the first effort to raise it in the United States was made in Virginia in 1721 and the first exportation of cotton, consisting of eight bags, was made from the same State in 1784. The invention of improved spinning and weaving machinery in England, followed by the invention of the gin by Whitney, gave the first real stimulus to cotton cultivation in this country. From that time the industry has grown to its present enormous proportions until each year the crop covers over 25,000,000 acres of land, on farms valued at $1,100,000,000, and is valued at over $950,000,000. Cotton is indeed the only "King" in this republic, although other natural products may be more opulent.

Let us now consider the no less remarkable growth of the cotton manufacturing industry. When Alexander Hamilton wrote his report on manufactures in 1791 he referred to certain branches of the textile industry as already established in this country. At that time, however, there was but one cotton factory where spinning was carried on by machinery moved by water power and that factory had been running less than a year, and had a total of 72 spindles. There was also a cotton factory in Beverly, Mass., which was run by horse power and contained 84 warp spindles, a few other spindles for spinning filling and 12 looms. It should be noted that the looms were run by hand, as the power loom was first introduced by Francis Lowell at Waltham, Mass., in 1816. Some progress was made during the next 15 years but it was not till the War of 1812 and the embargo which preceded it cut off foreign commerce with this country, from 1807 until 1815, that cotton manufacturing was really "established." Since that time it has grown steadily and marvelously and during every decade there has been an increase in the number employed and in the quantity of goods made. In 1850 the value of goods had increased to $61,869,184 and the number of people engaged in the industry was 92,286. This wonderful increase has continued till in 1900, the last census year for which figures are available, the value of cotton manufactures had reached the enormous total of $332,806,156 and the number employed was 297,929. The spindles had grown from the 72 in 1792 to 28,099,000.

Such, in brief, has been the marvelous growth of the cotton-growing and manufacturing industries of our country, a growth of which we are all proud and which we hope to see continue even more wonderfully in the years to come. Growth means progress, and to meet new conditions and new demands we must improve our methods of raising and of manufacturing cotton. The meetings of our manufacturers for over 50 years have abounded in criticisms upon the growing, packing, handling and merchandising of cotton, but I regret to say the conditions have remained practically the same. Conferences have been held and resolutions adopted without number, but the actual results have been insignificant.

It seems to me, however, that the time has now arrived when we ought to secure some definite improvements along the lines mentioned. The growers are alert and interested, the manufacturers appreciate their responsibility and are prepared to cooperate, and the Department of Agriculture is offering its valuable services in many ways. The situation is favorable for a distinct advance. The numerous conferences have brought together the various interests, the old antagonisms or jealousies have been swept away, a feeling of cooperation has been developed and, if we all work together for the common end, is it too much to expect that this conference will really amount to something and that as a result a great forward movement will be taken?

The time for resolutions has gone by. What we need now is action; action that will sincerely attempt to carry out the resolutions passed in previous years, and which if carried out will bring about a development in our industry that will exceed our greatest expectations.

Much disappointment was felt that President Barrett of the Farmers' Union and other members of that committee were unable to be present so that the meeting did not take on quite the character hoped for in representing the different branches of the industry from the grower to the manufacturer, although some members of the American Cotton Manufacturers' Association present were interested in cotton growing. The topics outlined by President Hobbs in his opening address were considered in their order.

There was a very strong opinion expressed in advocacy of the compression of cotton bales for shipment at the gin, in order to avoid damage incident to transportation of the farmers' bale to the compresses, and also the great losses under the guise of sampling. It was understood that the various Associa-

tions should appoint a joint Committee on the question of tare on cotton, following very closely the lines which have been so advantageously followed by the joint Committee work in the preparation of the standard sale note for plain cotton goods and for yarn. It was held that inducements of premiums should be held out to the farmers for superior ginned, baled and warehoused cotton, as under the present merchandising conditions he is not receiving any additional amounts for such cotton beyond what he now obtains for cotton baled in the usual manner.

Information was given to the meeting that a cotton baling material made of an India grass which is covered with minute barbs and very brittle had been offered in this country. The adhesion of these small barbs to the cotton was so close it cannot be removed in the course of manufacture, and instances were known where cotton baled in this manner has been declined as not being good delivery, and the subject was still under arbitration.

Approval was made of the standard bill of lading which is known as the Stevens Bill, and which has passed the House of Representatives and reached the Senate, but the death of Senator Elkins who had the bill in charge, may postpone action by that body. Approval was voted of the standard grades of cotton as established by the United States Department of Agriculture, which had been adopted by the cotton exchanges in the leading Southern cities, and the New York cotton exchange was requested to adopt it. The desire was expressed that the Department of Agriculture should provide facilities for standard measurements of cotton staple.

The standard sales contracts which had already been adopted by the National Association of Cotton Manufacturers, and also the American Cotton Manufacturers' Association, were submitted with approval and the Conference listened with interest on the present status of propositions for guaranteed warehouse certificates and improved methods of ginning and baling of cotton in that connection. The bill for conservation of forests at head waters of the White Mountains and Appalachian Range which is known as the Weeks Bill, having passed Congress, will be voted upon by the Senate on the 15th of February, was commended, and members requested to communicate with their Senators on the subject. An extended discussion was held upon the methods of distribution of goods generally in vogue among the cotton mills and possible economies in that method.

The principal motive in holding this informal conference was with the idea of getting a concensus of opinions upon some of the important issues connected with cotton and its manufacture, and the votes were merely of an advisory nature to indicate to the officers of the several Associations the general opinion of those present.

The Conference held a dinner Thursday evening, Feb. 2, at the New Willard Hotel at which Franklin W. Hobbs presided and addresses were made by D. Y. Cooper, President of the American Cotton Manufacturers' Association, Senator Henry Cabot Lodge, who was received by the whole company standing, Dr. N. A. Cobb, Agricultural Technologist of the Department of Agriculture, Colonel L. D. Tyson of Tennessee, and William Whitman, whose long years of service as President of The National Association of Wool Manufacturers had terminated the day before. Mr. Whitman spoke interestingly and in a reminiscent vein of the changes in textiles during his remembrance, which reached back to hand spinning and weaving.

The representatives of the American Association took occasion to extend most cordial invitations to the National Association to hold their autumn meeting in the South, and President Hobbs promised that the matter should have careful consideration.

Letters of regret were read from Honorable James Wilson, Secretary of Agriculture, Senator Augustus O. Bacon of Georgia, Honorable Charles Nagel, Secretary of Commerce and Labor, and Captain John W. Weeks, Congressman from Massachusetts.

DINNER TO JOHN P. WOOD.

A testimonial dinner is to be tendered John P. Wood, newly elected president of the National Association of Wool Manufacturers, by his Philadelphia friends and fellow manufacturers. It will be held at the Manufacturers' Club on Saturday evening, Feb. 25th, and arrangements are being perfected to make it an opportunity for demonstrating the esteem in which Mr. Wood is held by his fellow manufacturers.

THE MARKET FOR WOOL GOODS.

Much larger orders have been placed on overcoatings than last year. Not alone clothing manufacturers and cloak makers, but also the retailers carried over very little or no winter clothing from 1910.

The radical reductions in prices by the American Woolen Co. seemed at first to upset the trade, but the independent manufacturers met the reductions promptly. While it is known that large orders for overcoatings and ulsterings were booked by the American, competing mills have recorded much larger orders for such goods this year than in 1909 or 1910. Metcalf Brothers announced a reduction of 20 per cent. on their Wanskuck sixteen-ounce worsted serges, clays and unfinished worsteds. Their last year's prices were $1.50 to $1.90; the same fabrics this fall season opened $1.32 1/2 to $1.67.

The Cleveland Worsted Mill's opening prices for the fall, 1911, are from 87 1/2 to $1.22, which is 15 per cent. lower than last fall's prices. Morton H. Meinhard & Co. are the selling agents. Herbert E. Peabody is selling the Carolinas and Ashaway worsteds at from 10 to 15 per cent. below last year's quotations.

All along the line of selling agents' opening prices of fall 1911 overcoatings, suitings, trouserings and women's fall 1911 woolens, especially in the medium goods, I find average price reductions about the same. The general opinion prevails among selling agents that present prices of woolens and worsteds have touched bottom and will not be lowered. This opinion is also shared by clothing manufacturers now in the market, where they have placed much larger orders for ulsterings and medium priced suitings than in 1909 and 1910. There is no such thing as a "selling agents' rout." Such misleading ideas come from untrustworthy sources.

Quite a goodly number of buyers are placing orders this week on Montagnac and Elesian and Vicuna overcoatings. Prices run from $3 to $6 per yard, and the goods make very rich garments for men and women. Only high class manufacturers and custom tailors use these fine fabrics. The Germania Mills do an extensive business on these goods.

Chinchillas are likewise in good demand and the Worumbo Mills are booking satisfactory orders on these overcoatings and motor coats. They come in blue, black, oxford, gray and slate colors. Prices run from $1.62 to $4. The blue chinchillas are largely used by boys' and children's clothing manufacturers, who make them up into boys' and children's reefer coats.

There is a diversion of opinion among mill agents and clothing manufacturers as to which fabric will have the call for 1911 fall suitings and trouserings? Prominent clothing men say that worsteds will again take the lead because of their good wearing qualities, and the fact that worsted garments keep their shape better than woolen clothes. Others argue that the consumers will choose the more nobby, attractive, softer feeling woolen suits such as are found in the better grade tweeds, cheviots, bannockburns, homespuns and cassimeres.

Very favorable reports are brought back from returning clothing salesmen who are most enthusiastic regarding the business outlook in the middle and northwestern states for the spring and fall 1911 trade. A like opinion is expressed by the majority of clothing and cloak manufacturers and retail clothing buyers in New York. These men say that since there is so little surplus of winter stocks left over from last year, there is room for new supplies.

During 1909 Russia imported 405,550,000 pounds of raw cotton, valued at $50,026,585.

DEVELOPMENT OF ELECTRICAL DRIVE IN THE MILLS OF THE PROXIMITY MANUFACTURING CO., GREENSBORO, N. C.

BY JOHN P. JUDGE.

The Proximity Manufacturing Company of Greensboro, N. C., operates two large cotton mills for the manufacture of indigo blue denims. The company was organized in 1895 by Messrs. Moses H. and Caesar Cone and associates. The Proximity Mill was erected and started in 1895, its equipment including 20,000 spindles and 1,000 looms. A double spinning shift was instituted, and the looms were operated only in the day time. According to the custom at that time, the power house closely adjoined the mill, a 750-h. p. Corliss engine being belted directly to the head shaft in the spinning room and separately belted to jack shafts between engine room and weave shed.

As the business of the concern increased, additions to the equipment were made until it was found that the engine was carrying about 20 per cent. overload and to get satisfactory draft a fan had to be installed in the stacks. In 1900 the owners determined that better results could be obtained by restoring the engine to its rated load, and after a thorough investigation, decided to install a separate engine with generator to drive the weave room. This was the first step taken by the company towards its present extensive system of electric drive. The equipment consisted of a 250 k. w., 100 r. p. m., 600 volt, three-phase, 40 cycle generator direct coupled to a Corliss engine, the set being erected in the power house alongside of the first engine. Three 100-h. p. motors were installed in the basement of the weave room,

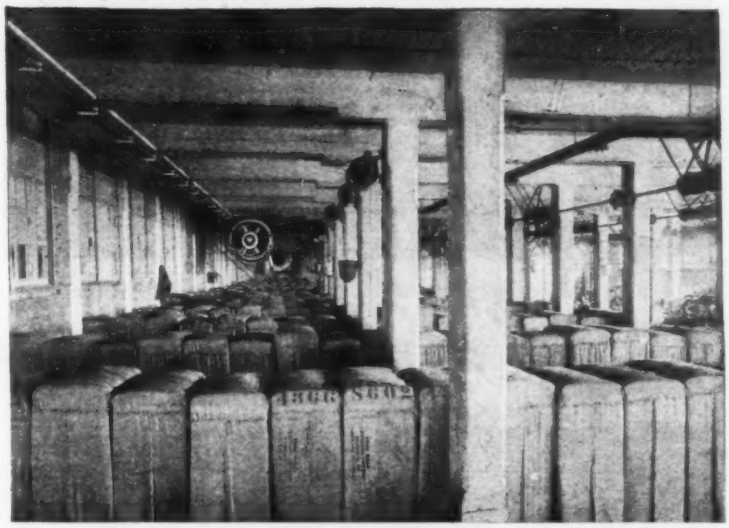


FIG. 1. VIEW OF BASEMENT SHOWING MOTORS FOR OPERATING MACHINES IN WEAVE ROOM LOCATED ON FLOOR ABOVE. PROXIMITY MILL.

each motor being belted to four shafts. Two of these motors are shown in Fig. 1. In ten years' continuous service the total expense chargeable to these motors has not exceeded $100. The only change made in this motor equipment was that automatic oil switches were substituted for the air brake switches and fuses originally installed.

Before this installation was made, careful readings were taken on the engine to determine the amount of power used in the weave room. Similar readings were taken after the motors were installed (the number of looms having been increased 10 per cent. during the meantime), which showed that almost exactly the same amount of power was required as before, but with an increased production of 15 per cent.; it having been found possible

to operate the looms faster with the motor drive. It was also found that for the same total output formerly carried on one engine, the two engines consumed less steam and required less coal, and incidentally the fan was not required in the stack.

vated and surrounded by a thick growth of pine and oak. A considerable tract of woodland is set aside as a park for the benefit of the operatives.

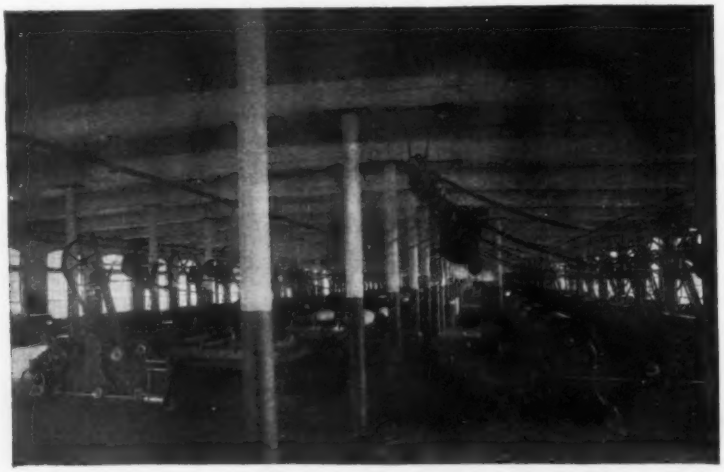


FIG. 2. SECOND STORY OF PICKER BUILDING SHOWING 200 H. P. MOTORS SUSPENDED FROM CEILING RAFTERS. WHITE OAK MILLS.

This mill has 60,000 spindles and 2,000 looms, with the necessary preparatory ma

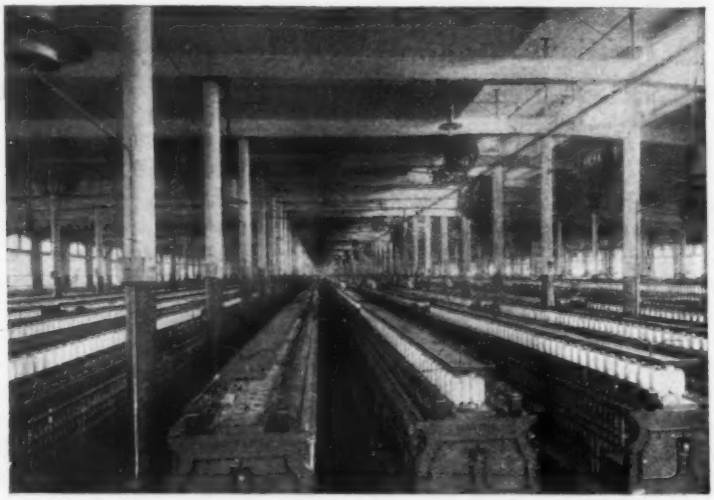


FIG. 3. SECOND STORY OF SPINNING BUILDING CONTAINING 60,000 SPINDLES OPERATED BY SEVEN 200 H. P. MOTORS MOUNTED ON CEILING. WHITE OAK MILLS.

In 1902 the owners decided to build a larger mill about two miles from Proximity, this mill now being known as the White Oak Mill. The site is an ideal one, being well elechinery and dye house. The main buildings comprise a two-story picker building, 312 ft. by 78 ft.; a two-story spinning building, 750 ft. by 155 ft.; a weave shed, 904 ft. by 180 ft.;

a dye house, 312 ft. by 105 ft., and a power house, 264 ft. by 136 ft., with two radial brick stacks 176 ft. high, one with a 12-ft. flue and one with a 9 1/2-ft. flue.

land slopes in that direction, giving good facilities for the delivery of coal to the boilers and for handling the condensing water. One-half of the building is devoted to the

FIG. 4. SWITCHBOARD AND EXCITER IN POWER HOUSE. WHITE OAK MILLS.

The owners' experience at the Proximity Mill had convinced them of the advantages

boiler room, which contains 26 Heine water tube boilers, 16 of 200 h. p. and 10 of 250 h. p.

FIG. 5. GROUND FLOOR UNDER WEAVE ROOM SHOWING 150 H. P. MOTORS OPERATING MACHINERY ON FLOOR ABOVE.

of electric drive, and the White Oak Mill was therefore laid out for that system of power distribution. The power house was placed to the west of the other buildings, as the

each. The other half of the building, which is separated from the boiler room by a fire wall, is the engine and generator room, with a considerable offset for the switchboard.

Two generating units were installed when the mill was built, each unit consisting of a 1,250 k. w., 600 volt, three-phase, 40 cycle generator direct coupled to a 2,000-h. p. Corliss engine operating at 75 r. p. m. At the same time, there was also installed one motor-driven and one steam-driven exciter, each of 50 k. w. and each capable of exciting the two generators. All feeds are carried in an underground tunnel from the switchboard to the several buildings.

Fig. 2 is a view in the second story of the picker building. The two motors shown are each of 200 h. p., 480 r. p. m., and are directly connected to the line shaft by two flexible couplings. In the first story there are three motors totalling 200 h. p., which operate the openers, etc. The first story of the spinning building contains two motors of 200 h. p. each, which operate the cards, drawing frames, slubbers and speeders. The second story contains spinning frames aggregating

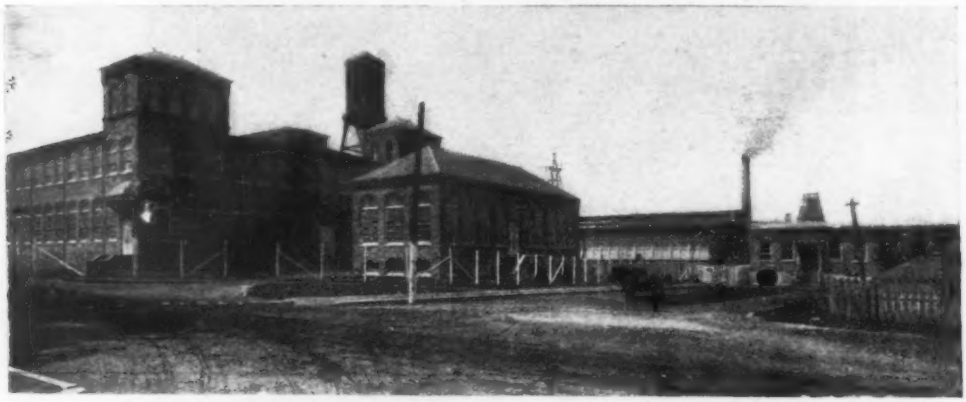


FIG. 6. OFFICE AND SUBSTATION. PROXIMITY MILL.

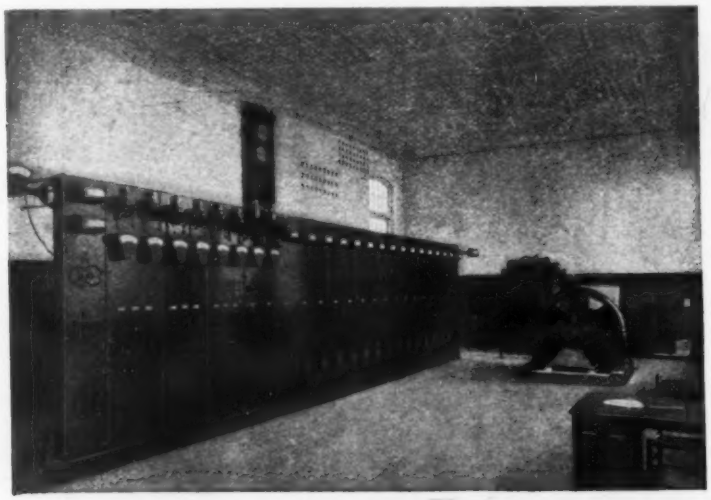


FIG. 7. SUBSTATION AT PROXIMITY.

60,000 spindles, together with warpers, etc., all of which are driven by four motors, each of 200 h. p., mounted on the ceiling and belted to countershafts as shown in Fig. 3.

The looms in the weave shed are driven from below, the motors and shafting being

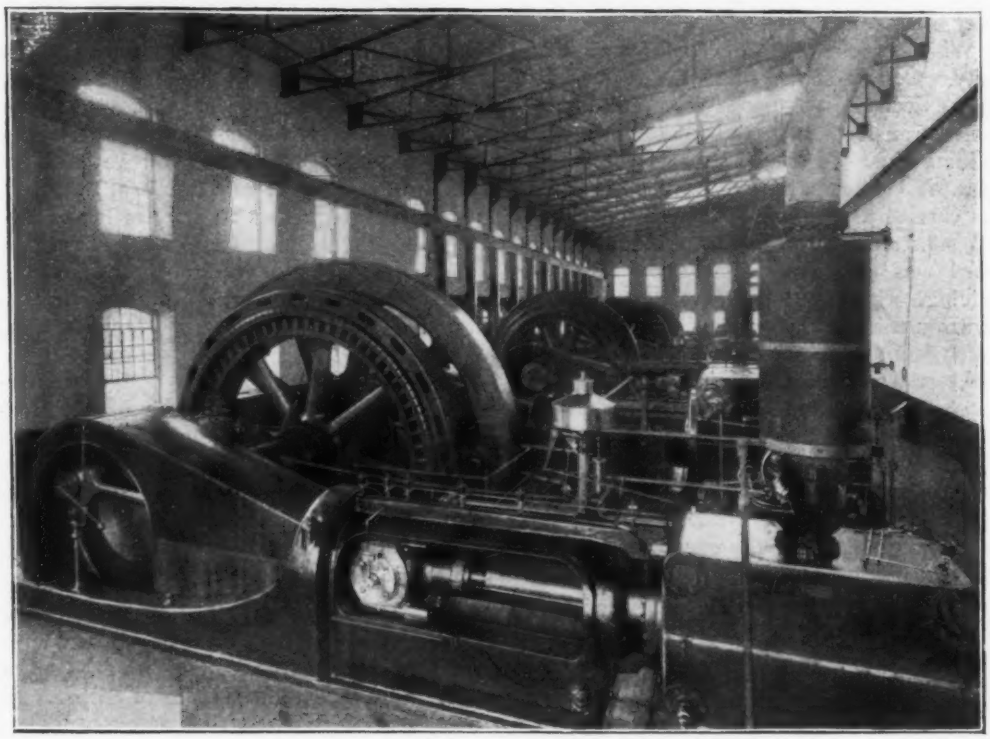


FIG. 8. POWER HOUSE OF THE PROXIMITY MFG. CO., GREENSBORO, N. C.

located in the basement. In this building there are four motors, each of 150 h. p., 600 r. p. m., belted to four shafts. Fig. 5 shows some of the motors in basement of weave room. It will be noted that this building is equipped in precisely the same manner that the weave room at Proximity was equipped five years before—good evidence that the owners were well satisfied with their first experience.

The dye house of this mill is unusually large and admirably appointed. The dyeing machinery is operated by one motor, which is of 100 h. p., a similar motor being used for driving the slashers in another section of this building. This mill is operated single shift.

In 1907 it was decided to enlarge the power house at White Oak and drive the Proximity Mill therefrom, abandoning the mechanical drive, which had been retained there, except for the weave room. At the same time it was concluded to abandon night work at Proximity. This necessitated doubling the capacity of the yarn-making machinery at that mill; a new two-story building 430 ft. by 130 ft. being erected for the purpose. A new dye house was also constructed and other improvements made, bringing the equipment of this mill up to 45,000 spindles and 1,500 looms.

In the power house at White Oak there were added two 1,500 k. w., 600 volt, 40 cycle,

three-phase generators, each coupled to a 250-h. p. Corliss engine. The four units are shown in Fig. 8, and the switchboard in Fig. 4. This view also shows the motor-driven and steam-driven exciters. When this last enlargement was made, a motor-driven exciter of 125 k. w. capacity was installed.

To transmit the required power to Proximity, it was necessary to step up the voltage at White Oak and to step it down at Proximity. Consequently, three single-phase, 40 cycle, 1,000 k. w., 600/15,000 volt water-cooled transformers were installed in a brick building just outside of the switchboard room at White Oak, and a steel tower line was carried to Proximity.

A substation for transformers and switchboard was also erected at Proximity, this building, which is 75 ft. by 30 ft., being shown in the foreground in Fig. 6. One end of this building is partitioned off by a heavy brick wall, and in the section so enclosed are placed three 40 cycle, 1,000 k. w., 15,000/600 volt, single-phase transformers and the lightning arresters, the transformers being located on a level with the ground. This section is full height of the building, giving ample room for high voltage connections. Fig. 7 shows the main section of this building. Besides the switchboard, a 250 k. w. rotary converted is installed, which furnishes current for the direct current arc lamps, formerly served by a separate engine-driven generator. The handle of the 15,000-volt automatic oil switch controlling the primary of the transformers is also shown at the end of the switchboard, the switch being located in the transformer section.

SWITCHBOARDS IN POWER HOUSE.

The switchboards are of black enameled slate, and are of standard General Electric design; each generator panel equipment including a Thomson recording wattmeter, as does also the panel controlling the line to Proximity Mill. On each feeder panel is an indicating wattmeter, and at the end of the board is a generator voltage regulator. These meters are read daily and a careful log is kept, by means of which the engineers are enabled to check the power output against coal consumption and also against the production of the mills. Very interesting and useful data is thus secured.

The electrical equipment is all of General Electric manufacture, and includes: Two 64 pole, 1,250 k. w., 75 r. p. m., 600 volt generators; two 64 pole, 1,500 k. w., 75 r. p. m., 600 volt generators; one 48 pole, 250 k. w., 100 r. p. m., 600 volt generators; one 50 k. w., 125 volt marine set (exciter); one 50 k. w., 125 volt motor-driven generator set (exciter); one 125 k. w., 125 volt motor-driven generator set (exciter); one 15 k. w., 125 volt motor-driven generator set (exciter); six 40 cycle, 100 k. w., 15,000/600 volt water cooled transformers; one 6 pole, 250 k. w., 250 volt, 3-wire rotary converter; 819 arc lamps, and the following standard 40 cycle, Form "L" (wound rotor), 550 volt motors: Ten 200 h. p., nine 175 h. p., three 150 h. p., four 125 h. p., five 100 h. p., two 75 h. p., one 60 h. p., one 50 h. p.

These mills are probably the largest consumers of cotton in the South, using approximately 60,000 bales per annum.

All mechanical and electrical problems are under the supervision of the General Superintendent, Mr. R. G. Campbell, and his assistants, Messrs. U. S. Greer, steam engineer, and W. J. Dorworth, electrical engineer.

There were in the cotton growing states 30 years ago only 561,360 active spindles which consumed 188,748 bales of cotton. In 1910 there were 10,801,494 active spindles, consuming 2,292,333 bales of cotton.

The average weekly consumption of cotton in the United States last year amounted to about 92,000 bales, compared with 108,000 in 1909, 87,000 in 1908, and 96,000 in 1907. Inasmuch as the cotton was reexported the value of Egyptian cotton imported for the year ending August, 1910, was about $11,500,000.

The total quantity of cotton imported into the United States during the year ending August, 1910, amounted to 172,075 bales of 500 pounds each. Of this cotton the equivalent of 20,680 bales was reexported, leaving in the country 151,395 bales, valued at about $15,500,000.

Correspondence and Notes

UPON TEXTILE TOPICS AT HOME AND ABROAD

THE PRINTING OF SKEIN YARN.

BY ROBERT DANTZER.

(Translated from the French by the Editor of the Textile World Record.)

(Continued from December.)

The recipes for the printing solutions vary with the different textile materials.

PRINTING ON COTTON.

Thickening Materials. The solutions are thickened with wheat or corn starch, dextrine, British gum, tragacanth, lichen mucilage or gum. For the Mahon system one of the following compositions may be used:

No. 1.

Wheat starch	parts	290
Tragacanth (60:1000)		400
Water		2,150

Boil 15 minutes, at the same time stirring vigorously, and add immediately

Acetic acid, 50%	parts	160
Total	parts	3,000

Let cool.

No. 2.

Wheat starch	parts	250
Tragacanth (60:1,000)		550
Water		2,200
Total	parts	3,000

Boil 1/2 hour, cool and strain.

No. 3.

Wheat starch	parts	290
Tragacanth		400
Water		2,120

Boil 10 minutes and add

Olive oil		30
Acetic acid, 50%		160
Total	parts	3,000

Cool and strain. For Alizarine Red a small quantity of oil is added.

No. 4.

Wheat starch	parts	480
Acetic acid		360
Water		2,160
Total	parts	3,000

Let cool for 1/4 of an hour, then stir and strain.

When using the Wood machine the solution is thickened with parts of gum tragacanth (60:1,000) for each 10 of color solution, or with a small quantity of starch.

PROCESS OF PRINTING.

There are several different processes of printing cotton yarn:

1. Steam printing.
2. Oxidized colors.
3. Insoluble azorques colors formed on the fiber.
4. Mordant printing.

1. Steam Printing: (a) Substantive colors. Following is the formula for printing substantive colors with the Mahon machine:

Dyestuff	parts	22
Water		843
Wheat starch		80
Phosphate of soda		22
Glycerine		11
Oil for red		22
Total	parts	1,000

(b) Basic colors. The two following formulas can be used for all the basic colors:

For Colors Soluble in Water.

Dyestuff	parts	10
Acetic acid, 50%		25
Acetine		10
Water		414
Thickener 1		500
Tartaric acid		1
Tannin acetate (1:1)		40
Total	parts	1,000

Basic Colors Soluble in Acid.

Dyestuff	parts	10
Acetic acid, 50%		50
Acetine		10
Tartaric acid		3
Glycerine		15
Thickener 1		500
Tannin acetate (1:1)		40
Water		372
Total	parts	1,000

Steam for 1 to 1 1/2 hours. The lake formed on the fiber is made fast to water and soap by a passage in tartar emetic, after which the material is rinsed thoroughly.

(c) Mordant colors. Certain mordant colors, especially alizarine printed with

alumina, are printed on oiled yarn. From 30 to 50 parts of oil are used for each 1,000 of the bath if entered dry, or from 50 to 70 parts if the yarn is wet. An excess of oil should be avoided, otherwise it will yellow the white, unless the yarn is rinsed and soaped immediately after steaming. The yarn is soaped at 60° F. with 1 per cent. of Marseilles soap, rinsed in water and soaped a second time at 140° to 212° F. in a fresh bath of the same strength.

Following are a number of formulas for printing with the Mahon machine:

Alizarine Yellow.

Thickener 2	parts 550
Alizarine yellow 5 G in powder	10
Water	375
Glycerine	15
Acetate of chrome, 20° B	50
Total	parts 1,000

Alizarine Violet.

Thickener 2	parts 600
Alizarine Red Paste, 20%	25
Acetic acid, 50%	20
Water	314
Acetate of lime, 10° B	25
Pyrolignite of iron, 30° B	16
Total	parts 1,000

Alizarine Rose.

Thickener 3	parts 600
Alizarine Red 1 B paste, 20%	12½
Acetic acid, 50%	20
Water	333
Acetate of lime, 10° B	16
Acetate of alumina, 12° B	18½
Total	parts 1,000

On oiled yarn.

Alizarine Blue.

Thickener 2	parts 550
Alizarine Blue S B powder	33
Water	384
Acetate of chrome, 20° B	33
Total	parts 1,000

Alizarine Brown.

Thickener 2	parts 550
Alizarine Brown R powder	17
Water	356
Borax	17
Chrome mordant neutralize	60
Total	parts 1,000

Philochromine.

Thickener 2	parts 600
Philochromine B paste	100
Formic acid	15
Water	260
Acetate of chrome, 20° B	25
Total	parts 1,000

Alizarine Orange.

Thickener 3	parts 550
Alizarine orange paste, 20%	100
Acetic acid, 50%	40
Water	145
Acetate of lime, 10° B	55
Acetate of alumina, 12° B	110
Total	parts 1,000

Alizarine Red.

Thickener 3	parts 600
Alizarine Red 5 F paste, 20%	40
Acetic acid, 50%	20
Water	242
Acetate of lime, 10° B	32
Acetate of alumina, 12° B	44
Oxalate of tin, 16° B	22
Total	parts 1,000

Alizarine Grenat.

Thickener 2	parts 550
Alizarine Grenat R paste	100
Water	275
Acetate of chrome, 20° B	75
Total	parts 1,000

Alizarine Green.

Thickener 2	parts 550
Alizarine Green S paste	100
Bisulphite of chrome, 20° B	46
Bisulphite of nickel, 20° B	11
Water	293
Total	parts 1,000

Ceruline.

Thickener 2	parts 550
Ceruline S powder	30
Water	348
Acetate of Chrome, 20° B	72
Total	parts 1,000

Chromoglaucine.

Dissolve cold

Chromoglaucine V M paste	parts 30
Water	180

Mix with

Thickener 2	600
Water	120
Formic acid, 98%	15
Acetate of chrome, 20° B	55
Total	parts 1,000

(d) Eosine and acid colors. These dyes are at times used for bright colors, but they are not fast to water. Following are a number of recipes:

1. Acid Colors.

Ponceau	parts 15
Water	310
Thickener 2	600
Acetate of alumina, 12° B	75
Total	parts 1,000

Print the yarn without oiling, and steam 1 hour without pressure.

2. Eosine, Erythrosine, Phloxine, Rose Bengal, Etc.

Dyestuff	parts 15
Water	340
Thickener 3	600
Acetate of chrome, 20° B	45
Total	parts 1,000

Print on yarn with or without oiling, and steam 1 hour without pressure.

3. Acid Rhodamines, with Chrome.

Rhodamine G	parts 15
Water	330
Thickener	600
Acetic acid, 50%	15
Acetate of chrome, 20°B	40
Total	parts 1,000

Print on yarn without oil and steam for 1/2 hour without pressure.

4. Rose Aniline Blue.

Alcaline blue	parts 15
Water	385
Thickener 2	550
Oil for acid red	25
Acetate of chrome, 20° B	25
Total	parts 1,000

2. Oxidized Colors. The colors formed on the fiber by oxidation are aniline black and diphenyl black. Aniline black is applied as follows:

(a) Colors Developed Under Tension.
Sulphite of Copper Black.

Tragacanth (60:1,000)	parts 200
Water	351
Aniline Salt	92
Aniline oil	3½
Chlorate of soda	23½
Water	150

Add when used

Sulphate of copper in paste	30
Water	150

Vanadium Black.

Tragacanth (60:1,000)	parts 200
Water	524
Aniline oil	50
Hydrochloric acid, 22° B	46
Chlorate of soda	23½
Water	150

Add when used

Vanadate ammonica (1:1,000)	6½
Total	parts 1,000

(b) Colors Developed by Steaming.
Black.

Tragacanth (60:1,000)	parts 200
Water	284
Aniline salts	62½
Aniline oil	3½
Yellow prussiate	33½
Water	200
Chloride of soda	16½
Water	200
Total	parts 1,000

Prud'homme Black (Preparation).

Aniline salts	grams 84
Tragacanth (60:1,000)	40
Aniline oil	5
Water	220
Ferrocyanure of potassium	54
Water	260
Chloride of soda	30
Water	307
Mix and fill up to 1.000 parts	1,000

Reserves for Prudhomme Black.
Reserve 1.

Tragacanth (60:1,000)	parts 200
Water	560
Chalk	200
Carbonate of soda	40
Total	parts 1,000

Reserve 2.

Tragacanth (60:1,000)	parts 200
Water	300
Acetate of soda	100
White zinc (1:1)	200
Hydrosulphite N F conc. (1:10)	grams 200
Total	grams 1,000

If the shade becomes too dark by drying or remaining in storage before printing, Reserve 2 is used containing Hydrosulphite N F concentrated.

Reserve Colors.

Basis dyestuff	parts 10 to 20
Water	320 to 310
Senigal gum (1:1)	300
China clay (1:1)	150
Acetate of zinc	120
Hydrosulphite concentrated (1:10)	100
Total	parts 1,000

This is printed on dry yarn. If it is a color which runs easily the printing is done on yarn still hot from the drying. In this case the yarn is treated for two hours in a bath at 105° F., containing 1 part of am-

monia (25 per cent.) for 1,000 parts of water. It is then rinsed and dried. The rinsing can be replaced by light starching with 1 part of starch and 1/2 part of dextrine for each 1,000 parts of the bath. After printing the yarn is immediately placed in a hot chamber to develop the color. Following are the colors used for printing for the Mahon machine:

Color A.

Dissolve hot

Diphenyl black 1 ..... parts	30
Acetic acid, 8° B	85
Lactic acid, 50%	40

Cool and add

Tragacanth (60:1,000)	100
Cold water	245

Color B.

Chloride Alumina, 30° B	17½
Chloride of copper, 40° B.....	2.8
Tragacanth (60:1,000)	100
Cold water	255

Add a cold solution of

Chloride of soda	25
Water	100

Mix and bring the weight up to one 1,000 parts when using.

The total value of cotton goods of domestic manufacture for 1910 amounted to $33,398,672, whereas the imports of cotton manufactures into the United States during the same year amounted to $66,473,143.

PIQUES AND WELTS.

BY GLAMORGAN.

A large variety of fabrics are included under this head, in all of which a plain cloth stitched down by means of a back warp in such a way as to form cords or ridges across the piece, is the characteristic feature. Although the simplest welts, namely, those that form a uniform rib from selvage to selvage, may be woven by means of tappets, yet a dobby is required for weaving the figured varieties.

In a study of pique welts, it is best to

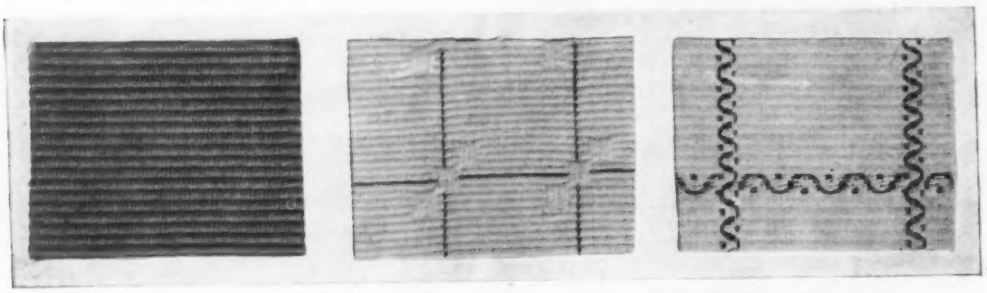


FIG. 1 FIG. 8 FIG. 10

obtain a clear idea of the construction of the simpler varieties, since the principle underlying them all is the same, the almost innumerable devices introduced for ornamentation being simply additions to the true pique welt.

Two warps are used, termed face and back,

FIG 3.

there being twice as many face as back ends. These are arranged in the dent, 1 face, 1 back, 1 face, in order to obviate reediness. The face ends are drawn on 4 shafts, as in a plain loom. The back ends may be drawn on one or two shafts as the fineness in the setting of the cloth demands.

The face warp is woven comparatively slack and interweaves in calico order with face picks only, the back warp is held very

tight and floats behind when the face picks are being inserted, but on the cutting pick all the back warp is lifted, all face ends remaining down, when the tension on the back warp

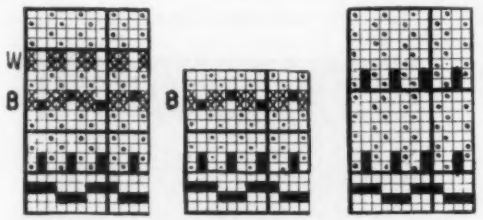


FIG. 2. FIG. 4. FIG. 6.

is sufficient to pull the slackly woven face cloth into ridges across the piece.

In the better qualities and also when it is desired to weave a wider welt, wadding weft is inserted in order to increase the prominence of the welt. In some cloths the fine weft is used as wadding, but in the better qualities an extra weft is used, the counts of which may be varied, so that 2 picks are generally sufficient to give the effect desired. In order to obtain the best effect from the use of the wadding picks, it is advisable that they should be placed in or near the middle of the welt, in the lower makes of cloths especially. This is of importance, for if the wadding is inserted near the cutting picks it is apt to give an angular appearance to the welt. In highly picked cloths the bad effect is minimized as the pressure of the picks helps to push the wadding picks to their proper position.

In some makes in order to increase the wearing properties of the cloth, two back picks are inserted in each welt; these are generally from the coarse shuttle and weave calico with the back ends only, so that instead of the back ends lying loosely on the back of the cloth, they form a coarse calico cloth underneath the face cloth, with the wadding picks lying between the two cloths.

FIG. 5.

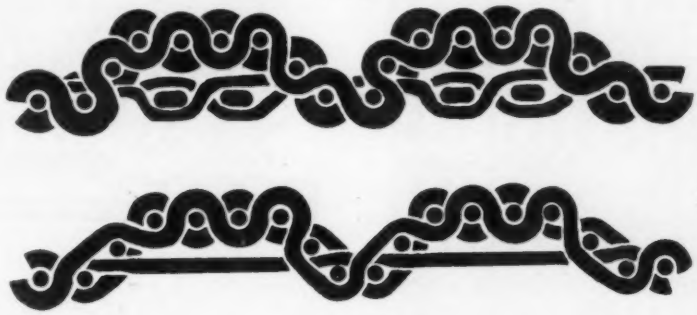


FIG. 7

The order of the sheds immediately before and after the cutting picks must be carefully noted, since this has an effect on the appearance of the cutting. Taking a cloth with one cutting pick, if a fine cut was required, the

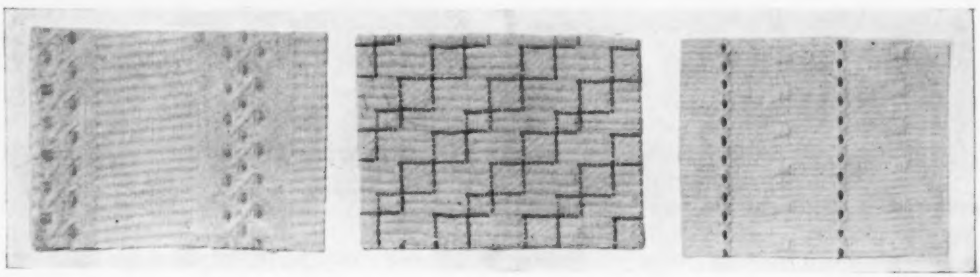


FIG. 11. FIG. 12. FIG. 14.

first face pick of a welt would be placed in the same shed as the last face pick of the previous welt. If a broad cutting was required the two picks mentioned would be placed in opposite sheds.

In highly picked cloths one cutting pick is

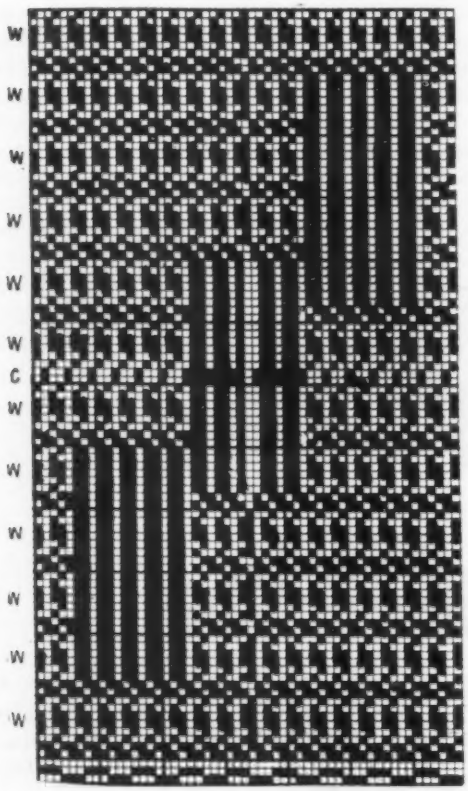


FIG. 9.

unable to bear the strain of the great tension placed on the back warp. In such a case two and in some cases three cutting picks are inserted, the face warp weaving calico on these picks instead of remaining down, as in the case of a single cutting pick. If a broad cutting is required the face ends weave plain throughout, but if a fine cutting is required, the first cutting pick is placed in the same shed as the last face pick, while the first face pick of the next welt is placed in the same shed as the second cutting pick. The ornamentation of these cloths has been carried out to a high degree, and although the dobby is generally used for the purpose, the aid of a jacquard is sometimes requisite.

Fig. I shows a characteristic welt in which there are both wadding and back picks,

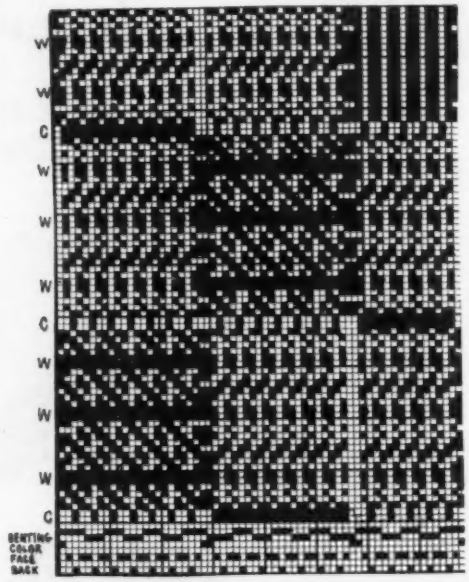


FIG. 13.

Fig. 2 shows design and Fig. 3 shows a longitudinal section. The structure of these

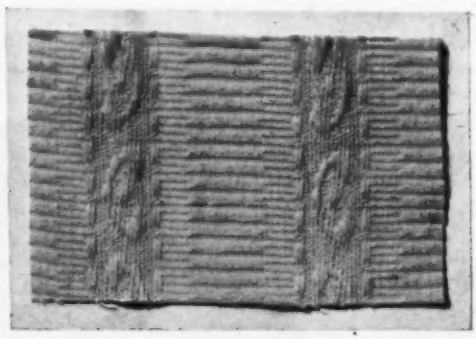


FIG. 15.

cloths is more clearly shown by Figs. 4, 5, 6 and 7. Fig. 4 shows the design for a two-shuttle welt having back picks, but no wad-

ding. Fig. 5 shows the section and also illustrates the structure of a broad cutting. Fig. 6 shows the design for a single shuttle welt, of which a longitudinal section is given in Fig. 7; this welt has a fine cutting, as will be seen from the illustration.

Fig. 8 shows a neat check effect in which a spot figure is introduced. This is obtained by floating face warp over all the picks and leaving back warp down for a similar period. Wadding picks are introduced, as shown in

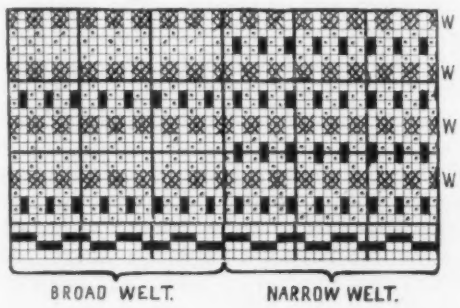


FIG. 16.

Fig. 9, which is a portion of the design on point paper. The wadding picks are indicated as also are the colored warp and filling threads. Fig. 10 shows another check effect in which the ornamentation is obtained by the use of extra warp and extra weft stripes; wadding weft is also inserted in this example. A neat one-shuttle welt is shown in Fig. 11, a satin stripe outlining a trellis effect upon which an extra warp spot is developed. The welt in this case is on 8 picks, 4 face, 2 wadding, and 2 cutting picks, and is of the coarse cut type.

Fig. 12 shows a welt ornamented with extra warp and extra weft. In the small squares formed by the colored threads a different weave is introduced to add variety. This example possesses additional interest from the fact that the cuttings along which the extra weft is inserted are coarse cut, while the intermediate cuttings are fine cut. The full design is shown at Fig. 13. Fig. 14 is a neat figured welt, in which an imitation of a leno weave forms an effective stripe effect, while the stitch adds variety. In this welt a single wadding pick is introduced in each rib. Fig. 15 shows a welt in which two sizes of rib are introduced while an extra warp effect of a large character gives a bold striping. The design for the welt effect is shown on point paper in Fig. 16.

WATER FILTRATION FOR INDUSTRIAL PURPOSES.

The regular meeting of the Institute, on the evening of January 18th, was devoted to the discussion of water filtration for industrial purposes, and a paper on that subject was read by Churchill Hungerford of Philadelphia.

His paper dealt with some of the extraordinary forms of pollution which cause trouble in certain special manufacturing processes, but in the main it discussed problems of purification of such waters as the average textile manufacturer is compelled to use. Various degrees and forms of contamination of streams were described and a number of interesting instances were cited showing the manner in which the impurities are so completely taken out of the water that it is made even more satisfactory than the municipal supplies of the towns in which the factories are located. Some interesting data relating to the relative amounts of water required by the different industries was given. "A pound of muslin or similar cotton fabric requires in the bleaching process about twenty-seven gallons of water. A pound of paper requires about fifty gallons of water and a pound of silk not less than one thousand gallons of water." The use of chemicals such as alum, lime, sulphate of iron, calcium hypochlorite, sulphate of copper, etc., as an aid to purification process was discussed, and a detailed account given of the manner in which these chemicals are completely removed from the water after they have done their duty. His article closed with a description of a filter plant capable of handling highly polluted waters.

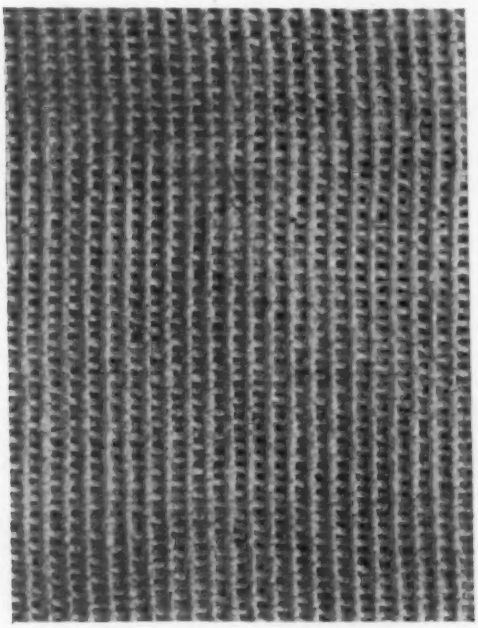
Of the total value of the exports of cotton manufactures during 1910, $10,102,094 represents the value of unbleached cloths; $1,351,040, the value of bleached cloths; and $8,519,674 the value of dyed, colored, or printed cloths.

PAPER LINED BAGS FOR WOOL.

By our Special Correspondent in France.

(Translated from the French by the Editor of the Textile World Record.)

As is well known great difficulty results in wool manufacture from the vegetable fibers that become mixed with the fleeces. These fibers can be removed only by hand and they remain practically invisible until the goods are dyed. After dyeing the jute fibers incorporated in the yarn, not having taken the wool dye, cause a marked defect by reason of the difference in color. These foreign



A PORTION OF A PAPER LINED BAG.

fibers must be either picked out or tinted with ink to bring them to the shade of the wool, both of which operations require tedious and expensive hand work. In some cases it is necessary to carbonize the goods in order to remove the vegetable fibers. These facts make plain the importance to the manufacturer of using wool free from all vegetable matter. The vegetable fibers come mainly from the material used for tying the fleeces and baling the wool. The fleeces having been rolled up, are tied with coarse twine, hemp, jute, sisal and similar materials, and then packed in bales which are wrapped with coarse jute cloth which varies in weight in different countries. In sorting the wool the fibers escape the attention of the workmen. In handling the bales the workmen frequently use hooks which tear the bagging causing the jute fibers to become mixed with the wool. The wool bagging made by "La Doublana," a corporation with headquarters at Roubaix, France, is intended to prevent this mixing of vegetable fiber with the wool. The method of baling is patented in France and other countries and consists in lining a jute bag with a fabric made of paper yarn.

I am sending with this article a sample bag in order that the readers of the Textile World Record may be able to inspect the new method of baling. The wool does not come in contact with the jute and as a result is kept free from the vegetable fibers. Although this method of baling has been but recently introduced, it has already made considerable progress, the only objection being the slightly higher cost as compared with the old process.

[The sample bag to which our correspondent refers can be seen at our Boston office. The illustration shows the paper lining on the inside and with which the wool comes in contact.—Ed.]

Cotton is imported into Greece annually to the amount of 8,000 to 10,000 bales.

Of the total value of cotton manufactures exported from the United States, $4,733,566 went to Europe; $12,972,522 to Canada, Mexico and the other countries of North America; $3,359,926 to South America; $11,633,251 to Asia; and the remainder $699,407 to Africa.

The quantity of cotton exported from the United States during the year ending August, 1910, amounted to 6,484,429 bales, valued at $460,868,020. Of this cotton, 2,480,400 bales went to the United Kingdom; 1,948,192 bales to Germany, and 981,382 bales to France, these three countries taking 83 per cent.

ENGLISH NOTES.

From our Special English Correspondent.

The new year finds Lancashire in a very much better position than a year ago with practically all cotton machinery at work at profitable prices. The year can hardly be other than a good one for wool goods, although it cannot be better than last and may be worse. Merino spinners are booked for half the year and in general the worsted trade is safe until April. The carded woolen branch is troubled only by the difficulty in making deliveries. Linen and jute are in short supply and at high prices and are giving spinners much embarrassment. The spun silk trade is brisk, chiefly because of American orders for tussah yarn.

All records have been broken by the export during last year of $2,152,945,000 of British produce and manufactures of which $796,000,000 lay in textile yarns and fabrics. The increase under the latter is roughly $104,000,000 upon the year before and the details show the increase to be of a thoroughly all-round character, indicative of a world-wide revival in the consuming markets. There is reason to suppose that distributors' stocks of woolens have been restored to something like an average and that cottons are well below the normal abroad.

* * *

Textile manufacturers are not alone in their outcry against foreign copying. Textile machinists complain and notably of copying in Japan. The Dobcross or Hollingworth & Knowles patent loom is duplicated in every detail by certain Japanese builders, who cannot be reached so long as their operations are confined to their own country.

The Huddersfield, Leeds and Scottish fine cloth manufacturers continue their expostulations against pattern copying and have talked vaguely of enlisting Government help. A Huddersfield man is responsible for the estimate that ten times more cloth is woven to Huddersfield patterns than is woven by the Huddersfield originators. A circular on the subject of pattern selling and piracy has been issued in English, French and German, warning woolen merchants, their travelers, agents and employes, that the signatories will decline to supply goods to any firms retaining the services of any persons known to have dealt wrongfully with patterns. The circulars threaten legal proceedings and point out that two Paris firms have already been blacklisted. The dismissal of a man known to have sold patterns to pattern dealers has been procured and the manufacturers decline to do business with anybody who may engage him during the next five years.

By way of commenting on these proceedings I may quote a Christmas letter received from a manufacturer of fine worsteds on the Continent-Translated. It runs: "We have just got some small cuttings of Huddersfield patterns from the ranges for the present (winter) season. The chief feature is the amount of red used and with their usual skill the designers have succeeded in getting brilliancy without gaudiness."

It appears, then, that the circulars have not been instantly effective.

* * *

Warning has already been given against paying in advance for any wool offered by strangers in Smyrna or Constantinople. The caution may be extended further; in particular to Roumania from whence offers requiring payment in Braila are being miscellaneously made. Certainly caution may be used in connection with direct offers from Morocco. Wool is being sampled from that country at prices 15 to 20 per cent. below the market, but the seller declines to give the buyer the opportunity of examining the bales in dock in England, even when the cash is put up beforehand with a Moroccan bank.

The English trade has not a high opinion of Mediterranean honesty. It remembers one interrupted operation in camel hair lying in South Russia. A man was sent to see the purchase packed and advised the seller that he would be coming on a certain day. An accident threw him a day late and on arrival he found the sellers had indeed packed the hair properly. But unfortunately they had begun unpacking it again and the inspector found the packers shoveling in sand.

Cottons figured with artificial silk have scarcely been a great success in the domestic trade, partly because voile goods are out of favor, partly because more substantial articles come in at less money. But the countries of South America and other hot countries with high tariffs on real silk are taking

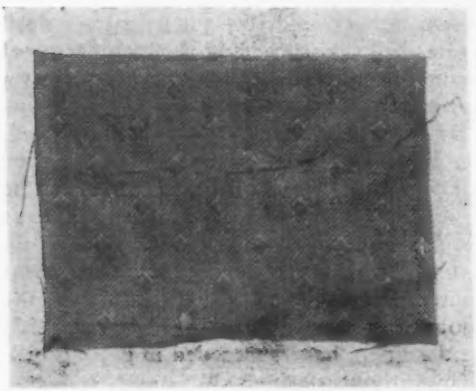


FIG. 1. COTTON GOODS FIGURED WITH ARTIFICIAL SILK

quantities of goods ornamented with artificial. Most owners of light looms in Bradford are making the goods and doing well with them. Bradford makes cost about 25 cents in 40 inches and are styled in geometrical, floral and grotesque figures which are usually formed by filling floats. In Fig. 1 the warp is plain dyed cotton, the figures are artificial silk and between figures the filling is mercerized yarn.

Fig. 2 represents a range of fancy voiles of S. Courtauld & Co.'s make, costing 31 cents in 42 inches, in which the artificial silk is used as a warp float. A small pattern is sent also of a beautiful imitation of a silk eolienne with a warp of cotton and a filling entered of very fine artificial silk. Patterns like these set at rest any doubt as to whether artificial silk has come to stay. There must be large possibilities still to explain in making fabrics for evening wear. To some minds artificial silk looks its best in black or cream or in fabrics in which black is contrasted with white. It makes a very rich gold upon a suitable background and in that color and silver white may compete favorably with tinsel. The Southerners indulge their taste for bright and fancy colors in this material.

Two works in England are now producing artificial silk yarn—Courtauld's, Coventry, by the viscose process and the Glanzstoffabriken, Flint, by the supric-ammonium process; and an experimental works is being set up in Bradford. The yarn is also imported. Apparently the world-production of the yarn is in the neighborhood of 6,000 to 7,000 tons per annum and it has perceptibly affected the business in mohair for braids and may yet make a difference to the mohair lining business. Silk men are principally anxious that the stuff shall be sold for what it is and not under misleading titles. The contraction

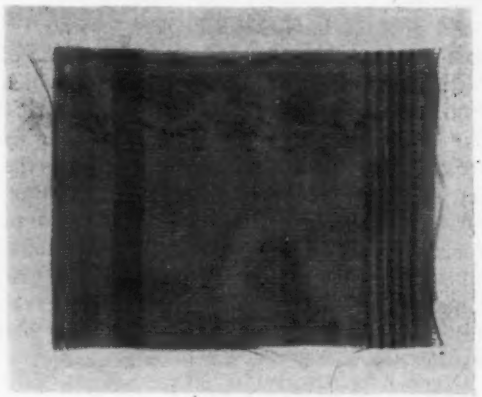


FIG. 2. A COTTON VOILE.

"Art. Silk" is objected to, because "Art Silk" was a well-known description before cellulose silk was known or thought of.

• • •

The woolcombing trade is now federated with an employers' federation on the one hand and a workmen's union on the other. In the Wages Board formed to settle all disputes as to wages and conditions it is agreed that the voting power of the employers' representatives and men's representatives shall be equal irrespective of the number present and in the event of a deadlock each side is to appoint an arbitrator and the arbitrators are to choose an umpire. As the result of long conferences the combers agree to en-

gage all their night men through the union. Night men not provided by the union have to become union members within a week; men expelled from the union for reasons satisfactory to the employer are not to be reengaged by any other firm; the employer is to put out of work any man who ceases to be a unionist. Learners are limited in number to 5 per cent. of the force. Individual employers are to be fined for breaches of agreement and workmen leaving without notice are to be fined similarly. A forfeit of $2,500 is to be paid by either side for failure faithfully to carry out the bargain.

These are great lengths to go in partnership with the union—greater lengths than anybody a dozen years ago would have deemed possible. In the interim the union has grown in strength and the industry has been syndicated and it is broadly the case all round in the English textile industry that the syndicates or combines are more disposed to conciliate the unions than were the smaller employers who have been superseded. Instances drawn from the dyeing trade could be adduced in support of this point. No doubt the fact that the combines are impersonal is of influence.

* * *

The influence of copper in causing mysterious faults in bleached goods has been noticed by the Manchester Society of Chemical Industry. Linen yarn soiled in spinning by oil from the brass parts of the machinery exhibit holes which look as though they had been made with an instrument in the bleached fabric. There is brass dust, hence copper, in the oil and this in bleaching is transferred into copper oxide which tenders the affected thread. The fault follows the line of that thread, producing the appearance of a cut. In bleaching cottons after they had been dyed tenderness has been noted and attributed to the copper lining or copper pipes of the dye-vessel.

A general tenderness in the warps of union and cotton goods used for rubber waterproofs continues to distress dyers who get the goods thrown on their hands. The chemists attribute the fault invariably to acid, which the dyers cannot trace or explain. Dyers feel in this as in some other matters that the root of their trouble lies in the adoption by other people of yarn not strong enough in the first instance for the purpose to which it is to be put.

* * *

It is said positively, and is not contradicted, that the Bradford Dyers' Association will open dyeing and finishing works in Rhode Island. It is said also that the Association will devote $3,750,000 to the purpose and although the statement as to the sum is unconfirmed the amount excites no surprise. The Association would be expected to act on a large scale if it acted at all and would only be following its own traditions in doing so. One of the processes the Bradford Dyers' Association may introduce to America is called "Thermaline," a dyeing process whereby white cotton warp luster dress goods are dyed to solid colors in the piece. The cotton dyeing is accomplished first by the aid of the so-called "Thermaline" fluid and the pieces are wool-dyed with as little delay as possible in order to avoid oxidation. A better luster is obtained than by the usual process of cross-dyeing a warp which has already been dyed, and the color is remarkably fast to rubbing. On the other hand the warp is rendered somewhat tender and the cotton is not always perfectly penetrated. Light shades are rendered better than dark and the shade if wrong at the first attempt can only with difficulty and within narrow limits be "cobbled." A batch of "Thermaline" patterns is sent to the Boston office of the Textile World Record. The exact process is of course secret, but it may be of interest to say that a dyer who has attempted with some success to duplicate the result says he did not use a vat color for the cotton.

* * *

While the Bradford dyers are deliberating over their American venture the Roubaix manufacturers of wool dress goods are formulating a proposal for sending their pieces to Bradford to be dyed. Some seventy of them are disposed to cooperate in a collec-

tive selling agency which would distribute their goods to the English home and foreign markets. They talk of $600,000 ready for this purpose. A difference of opinion as to the prices for dyeing charged by the Roubaix Dyers' Association has something to do with the scheme. Added to this is the increasing pressure of competition from Bradford-made satin faced Amazons woven out of cap spun South American wool. The dyeing of these goods no longer presents any difficulty to English dyers, although great care is needed to avoid oil spots on the delicate shades used. The French excel in finishing low-grade mule-spun goods of this class and will recover some lost ground when wool cheapens. As an instance of the number of shades wanted in one single cloth, the order of one wholesaler in quite a middle-class kind of trade may be cited. He has ordered for his spring sales fifty shades in a cheap fabric and some may order a hundred.

* * *

Against the will of some of their employers Lancashire weavers continue to "kiss the shuttle" and to prefer this primitive means of shuttle-threading to any other. The dangers have been so often expounded before that the death of three weavers at Bacup will possibly make no difference. Each had worked at the same set of looms, each had kissed her shuttles regularly and each died of consumption. This may have been cause and effect or mere coincidence. At all events the medical man regarded the affair with enough suspicion to ask to be permitted to sterilize the shuttles in that mill and the permission was promptly granted. The facts will presumably catch the eye of those who are organizing campaigns against consumption.

AN IMPROVED SHUTTLE.

The shuttle shown in the accompanying illustrations has recently been patented in this country. The construction is designed to prevent the bobbin from flying out of the shuttle in case the locking plate on the rear end of the shuttle happens to break. The inventor gives the following description of the device:

FIG. 1

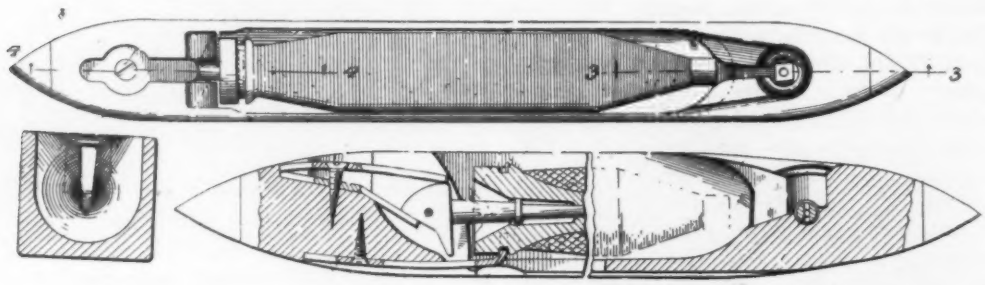


FIG. 4 FIG. 2 FIG. 3

Fig. 1 is a plan view of the improved shuttle; Fig. 2 is a section taken on line 2, 2 of Fig. 1, in the direction of the arrow; Fig. 3 is a section of the front portion of the shuttle, the section being taken on line 3, 3 of Fig. 1; Fig. 4 is a section of the rear portion of the shuttle taken on line 4, 4 of Fig. 1.

The bobbin is slipped onto a spindle, which is pivoted at one end by a pin extending crosswise of the shuttle.

When the shuttle is in its operative position the spindle and the bobbin occupy the position shown in Fig. 1, parallel with the longitudinal axis of the shuttle. The bobbin is then retained in place on the spindle and is prevented from slipping by means of a bobbin catch on a bobbin catch-plate, the catch engaging a peripheral groove on the end of the bobbin. The plate is located in a recess at the bottom of the end of the shuttle, and is held in place by a screw which passes through the plate and into the wood of the end of the shuttle.

The spindle is retained in the position shown in Fig. 1 by means of a spring or tongue, located in a recess in the upper face of the shuttle. Tension on the spring is adjusted by a screw which also holds the spring in position. The end of the spring operates with the head of the spindle. This head is provided with suitable faces, so that the bobbin spindle may either be held in its position in the shuttle or when thrown out from the shuttle for the purpose of changing the bobbin. When the spindle is in the shuttle the groove on the bobbin will be engaged by the bobbin catch, so that the bobbin is held in position in the shuttle. When, however, the spindle is moved on its pivot and out of the shuttle the groove on the bobbin will be moved out of engagement with the catch and the bobbin will thus be free to be withdrawn.

There are several defects in the use of these old and widely known shuttles which involve the construction so far described. If in placing a bobbin on the spindle it is not pushed clear down on the spindle, but only partially pushed into place, as often happens with careless operators, the end of the bobbin is brought into contact with the bobbin catch, and the spindle is returned to its operative position. As result of such carelessness the bobbin catch plate is subjected to strain and it sometimes causes the breaking of the plate or the breaking of the end of the bobbin. Even when the bobbin is properly positioned and locked the end of the bobbin will sometimes break, permitting the bobbin to slide up on the spindle. The result of many of these causes with the ordinary form of shuttle is that the end of the bobbin will wedge up on the front end of the slot and jump out of the shuttle, so that if the bobbin is passing through the shed the warped threads will be broken and the loom must be stopped until the damage is repaired.

In order to obviate these effects the end of the shuttle slot at the end of the shuttle is made in a novel form, and comprises the forming of the upper portions of the shuttle adjacent the thread slot leading to the thread-guide, with the over-hanging walls. The over-hanging walls are so positioned at the front end of the slot that when the bobbin is placed in proper position on the spindle and the spindle turned into the operative position with the bobbin catch in engagement with the peripheral groove, the end of the bobbin will just clear the edges of the over-hanging walls.

CLOTH FOR LANTERN SCREENS.

Since learning that "Veluna" cloth is different from that sold in America as "Luminare" I have made inquiries in the magic lantern trade. Their effect is to confirm the supposition that the "Luminare" comes from France. I was shown a screen made in France and imported and suitable for the uses of opaque projection and for daylight showing—the picture being projected from behind and seen by the audience through the fabric. The screen was mounted on wooden rollers and had a support of blackened, opaque, heavy material. Inset in this, as in a frame, was a square of the material through which the picture is shown. To all appearance the fabric was linen of a rather open weave, heavily finished with some extraordinary strong size, possibly containing fish-glue. The screen was slightly cockled in places, presumably by the drying of the glue and the silvery aspect of the beads of glue led to a doubt whether or not the screen had received a powdering with mica.

Such are the results of the only examination it was possible to make. There are reasons which go to suggest that the manufacture cannot be a large one. The screens are expensive, $7.50 for 6 by 6 ft. being the retail price in this country, and from this it may be supposed that the wholesale price is about $5. This price is a great increase over that of the ordinary calcimined canvas used for ordinary purposes. The fabric cannot be got in widths greater than six feet, and joinings within the field of the picture are fatal. The practical efficiency of the screen is well spoken of, but the limitations of price and size operate against an extensive sale. I am making inquiry further as to the name of the manufacturer. Regent.

Questions and Answers

Under this head we undertake to answer, free of charge, to the best of our ability, questions pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

If the question is not of general interest to textile readers and involves expensive investigation, a charge covering the cost may be made, of which the inquirer will be advised before any expense is incurred.

Bleaching Skein Yarn.

Editor Textile World Record:

What is the proper way to prepare skein yarn for boiling in a kier under pressure, the kier holding 1,200 pounds, and how much caustic soda should be used? Mitchell (1258).

There are several different methods of preparing skein yarn for bleaching, but the one generally used is the old way of bleaching yarn, in five-pound bundles. The latest method is what is called the link and chain, which consists in making the skeins in the form of a chain and running them into the kier like a long rope, in the same manner that piece goods are run in the bleaching process. The latter method, however, would require different machinery from that used for the bundle method.

I presume "Mitchell" is not equipped for the chain process, and I will therefore describe the process used for bleaching in the bundle. Pack the bundles, each weighing five pounds, into the kier, and saturate the layer thoroughly with water, then put in the next layer, placing the bundles even, but not too tight, in the kier, laying the second layer across the joints of the first layer, and so on, crossing the joints of each layer until the full weight is in the kier. Saturate each layer with water, leaving the outlet valve open to allow the surplus water to drain off the goods. When the kier is evenly packed and the yarn saturated, close the outlet valve and mix a solution of 2 to 3 per cent. caustic soda, 2 per cent of soda ash and 1 to 2 per cent. of soap or bleaching paste. Dissolve in enough water to cover the goods in the kier. If the yarn is coarse, boil the goods for about eight hours at fifteen pounds' pressure; if the yarn is fine reduce the percentage of caustic soda ash, but give the same length of time in the boil. Or use the same mixture and boil only six hours at fifteen pounds' pressure. It is preferable to use a smaller quantity of caustic and ash and boil for a longer period. "Mitchell" should consider whether the yarn is fine or coarse, hard or soft twisted, as a soft twisted yarn always takes less than a hard twisted one. I think that "Mitchell" has not been boiling his goods long enough, and that the caustic used is too strong. Uneven packing in the kier will often produce poor results. If a good white is desired I would advise using a mixture of 2 per cent. soda ash with the chemic powder or liquor, whichever is used. This mixture brightens the white and softens the yarn. If these instructions are carefully followed the yarns produced will have a fine, soft feel. Dulcimer.

Stamping Hosiery.

Editor Textile World Record:

Can you give me any information regarding the machinery and processes for stamping hosiery so as to get a clear, sharp impression like that on sample enclosed? Thornton (1261).

Our special English correspondent replies as follows:

Apparently the stamp used is one of the usual ones in which the letters are formed out of strip brass set in a base or handle of wood and the ink appears to be a water-paste compound.

Part of the problem of clear stamping consists in getting an equal distribution of the ink or paste used so that it may be picked-up evenly by the stamp and transferred uniformly to the fabric. Where a water paste is employed it is best to use a cloth pad on which to ink the stamp. With a little care the pad can be uniformly covered. All that

can be then done is to apply the stamp with firm and equal pressure while the fabric is laid on a plane and equal surface. It does not follow, however, that the impression will be as white and solid as could be desired. There are difficulties which letter press printers experience in getting a good white impression upon a dark background and these present themselves in stamping hosiery. The stamp fails to carry a sufficient body of dense, opaque white and a more or less grey, ragged and illegible impression is the result. To obtain a good white mark, a quantity of color has to be laid down on the fabric and in general watery mixtures are not the best for this purpose. They are perhaps the simplest and cheapest to use and they are most readily removed from the garment, but in the nature of the case they are not the strongest coloring agents.

The practical alternative to a water mixture is an oil mixture and the most useful of these is printer's ink or something of a similar sort. White inks are made for printers' use containing a great body of opaque white pigment expressly for use in printing upon dark grounds. These, for use in stamping cloth or hosiery, will probably need thinning with printer's varnish or boiled linseed oil. The oil medium in which the color is ground is of considerable tenacity and hence able to carry more pigment than pastes made with water. It cannot be used upon a cloth pad, but may be distributed sparingly upon a rubber one. Either by means of a squeeges roller or an inking ball it can be distributed evenly over the pad so that the stamp gets its proper quota. There are attendant disadvantages, for these inks with a base of white lead are quick-drying and tend to cake on the pad on which they are spread. Then the handling of the hosiery liberates a certain amount of dust and fluff, some of which settles on the inking pad and tends to clog the stamp and to confuse the impression. These accumulations can be disposed of with the help of turpentine or other solvent and the trouble may be borne if a print of solid white is of sufficient importance. The impression, although not indelible, does not so easily rub off as one that is attached simply by gums or glue. It may be advisable to use with such marking inks a deeply engraved metal stamp rather than a built stamp of brass strip.

Regent.

A comparatively new process of gold stamping by decalcomania transfer has recently been adopted by a number of large hosiery manufacturers with much satisfaction. The lettering or design is clean cut and the brilliant gold effect is very attractive. It is introduced by the Meyercord Co. of Philadelphia and Chicago.

Preparation of Absorbent Cotton.

Editor Textile World Record:

I would like to see an article published on the preparation of absorbent cotton. Bailey (1259).

The following reply to this question is taken from Revue Generale des Matieres Colorantes:

Absorbent cotton has in recent years been used otherwise than for medical purposes, and is now in requisition industrially for the preparation of the different esters of cellulose and of artificial silk. In the varied chemical transformations that cellulose must undergo before finally giving solutions which may serve for the manufacture of the several artificial silks (Chardonnet silk, solution of nitro-cellulose in alcoholic ether; Glanzstoff, solution of cellulose or hydrate of cellulose in Schweitzer's reagent; viscose silk aqueous solution of thio-carbonate of cellulose, the result of the combination of alkali cellulose with carbon disulphide) it is absolutely necessary to use material that not only wets out readily but that submits easily and regularly to impregnation with the solutions employed.

The two conditions—purity of the cellulose and readiness with which it wets out—while being corelated, may be attained separately. Dyers know well that without removing the impurities cotton quickly acquires the property of absorbing liquids by treatment with sulphoricinate, whereas cotton thoroughly purified is always hydrophile in character. The penetration of cotton by liquid reagents is a complicated operation, and without doubt can only take place after

the expulsion of the air held in the tubes of the fiber. The twisted form of the cotton fiber makes the central canal without outlet, so that the air cannot be expelled at the obstructed extremities, but necessarily through the cell walls. On the other hand, the penetration of the cell substance is accompanied strongly by osmotic phenomena, endosmose for the water or the reagent penetrating the cotton and exosmose for the air originally held in the dried fibers.

These phenomena of diffusion can only take place when the cell wall is porous, and as the natural impurities of the cotton are composed for the most part of resinous bodies, should in a way render the fiber impermeable and form an obstacle to the production of osmotic phenomena and thus to penetration. It is thus seen that both for medical purposes and for the special industrial usages enumerated the purification of cotton is as important a feature of its course of treatment as is that of being rendered hydrophile.

As far as cotton for medical purposes is concerned, it has to be remembered that the impurities natural to cotton consist of organic matters, which offer much less resistance to various reagents and are much more susceptible of giving rise to fermentation products, and in consequence more prone to putrefy than cellulose characterized by negative chemical properties. Therefore the degree of purity of cellulose measures the degree of aseptic power of absorbent cotton and is the essential condition of its hygienic character. In the same way the preparation of the esters and solutions of cellulose is fraught with many delicate reactions subject to complications not clearly defined, which might be deranged by the presence of a relatively feeble quantity of foreign matter. Under these circumstances it becomes necessary to have recourse to pure reagents and equally to cellulose as pure as it may possibly be obtained.

Imperfections in the boiling-out operations may result in only a partial expulsion of the air from the fibers, and this, in spite of all ulterior precautions, causes the introduction of a certain quantity of air into the cellulosic solutions, the presence of which may often account for the resulting cohesion of fibers of artificial silk. Osmotic phenomena are influenced by different factors which call for consideration. Naturally enough, the rate of penetration of salt solutions through the cell wall of the fiber should be slower than that of pure water; the rate of diffusion depends equally on the density and the viscosity of the solutions employed, so that it seems fair to admit, in extending the law of Graham, that "under the same pressure, liquids pass through the same wall at speeds in inverse ratio to the square root of their density."

The preparation of absorbent cotton should be simple enough when there is only from 5 to 6 per cent. of impurities to remove, but in boiling and bleaching operations as carried out there is risk in introducing others, besides interfering with the strength of the fiber. Boiling-out operations are usually accomplished with alkalies in a kier under a pressure of 2 to 3 atmospheres, which gives a temperature corresponding to from 250° to 270° F. Generally a solution of caustic soda (2° to 4° B.) is employed, and boiling continued for from 5 to 10 hours. Bleaching is carried out as ordinarily for cotton, though it would undoubtedly be an advantage to use the more soluble hypochlorite of soda, with which the formation of difficulty eliminated insoluble lime salts is not to be feared."

The following is taken from the Journal of the Society of Chemical Industries:

"Absorbent cotton should be made from the type of cotton known as Texas strict middlings, as other grades give inferior results. An unbleached absorbent cotton largely used on the Continent is made by simple extraction of the fatty matters by the aid of solvents. The best bleached product is made somewhat as follows: Washing in water; alkaline hydrolysis, consisting of a boil with 1 per cent. caustic soda for 12 to 48 hours under low pressure; washing; oxidation with hypochlorite of lime or soda, the latter being the best (the action is prolonged and the solution should contain about .01 per cent. chlorine, the cellulose itself is par-

tially oxidized and shows oxycellulose reaction); hydro-extraction; acid treatment in a 2 per cent. solution of sulphuric acid; washing and hydro-extraction; a second alkaline hydrolysis, consisting of a short boil with 0.25 per cent. caustic soda; washing and hydro-extraction; a second acid treatment; prolonged washing; treatment with anti-chlorine or a solution of soap; final washing. Sterilization by steam or by formaldehyde gas is also done in some cases. Mechanical processes for the preparation of the fiber are also necessary before and after the chemical treatment."

Formula for Sizing.

Editor Textile World Record:

In regard to inquiry of "Slasher" (1232) on page 346 of your December issue, would say, we do not think the formula offered by "Publico" will do much more than get "Slasher" out of the frying pan and into the fire. We think if he would use Gum Tragasol starch and Danamar softener in proper proportions, he would get results that would make him think he had been tied to a post in the past. Danker & Marston.

Bleaching Wool Without Costly Apparatus.

Editor Textile World Record:

How can I bleach wool without having to build an expensive plant? We have only about two tons of wool that requires bleaching each year. We have tried brimstone and it has not proved a success. We have an unlimited supply of good clean water. Lakewood (1210).

For bleaching small quantities of wool, or where the total amount to be bleached is never large, and where an expensive bleaching equipment is not essential, the best process to adopt is that using sodium bisulphite, and which requires only tanks or vats of proper size.

The wool to be bleached should be cleaned free of all oils, grease or dirt, and then entered into a cold bath containing, for every 100 gallons, 2 to 2 1/2 gallons of commercial sodium bisulphite at 64° to 77° Tw., and from 6 1/2 to 12 ounces of oil of vitriol. Agitate the solution well. The wool is to remain in this bath for several hours, remove, allow to drain well, and give a sour in a fresh bath containing about 8 ounces of oil of vitriol for each 100 gallons of water.

If "tinting" is desired, there may be added to the final bath traces of Formyl Violet S 4 B or New Methylene Blue G G.

The above is about the cheapest method to adopt for bleaching small or medium sized lots of wool. Berwick.

Paying by Rounds Knit.

Editor Textile World Record:

Do you know if the method of payment in knitting is based on the number of rounds knit on straight tubular work and if there is some means of counting for such purposes? Knitter (1253).

We believe there are some makes of foreign flat machines which are equipped with counters and we understand there is a knitting manufacturer in New York State who uses the Leighton machines who has applied the "Elm City" counters built by the C. J. Root Co. They had some difficulty in getting the right count, in knitting garments by the piece or by the dozen, from orders. Knitters would sometimes make a mistake in the count and this would cause much trouble in the cutting, finishing and packing rooms. This is overcome by the use of these counters and we presume that they would register rounds or any other unit that might be desired in calculating payment for piece work.

Knitting Horsehair.

Editor Textile World Record:

Can you give us the names of manufacturers of knitting machinery for knitting horse hair? Also give us an account of the process.

Knitter (1255).

Our English correspondent replies as follows:

Patient inquiries in several directions have failed to produce any positive result. The horsehair firms do not know of the use of their yarns by machine-knitters and the leading firms of knitting machine makers in England and on the Continent can throw no light on the matter. Inquiries made of the patentees of "Laptair," a spliced horsehair yarn which has been already described in these columns, show that it is not suitable

for machine knitting. The ends of the hairs are like little hooks and cannot be drawn round the needle. I thereupon procured balls of 2-fold horsehair spun yarn, of about 200 yards to the pound and costing 36 cents. By the courtesy of Wildt & Co. of Leicester, Eng., this has been tried in different machines, but not to good purpose. They report:

"We have made several trials, but cannot say it is satisfactory to knit on a machine as the hair gets entangled in the hooks of the needles. Some time ago we made trials for Norwegian manufacturers who intended to make slippers from horsehair, but we could not succeed."

I forward a skein of the yarn employed, but in 3-fold horsehair, also a bit of goathair yarn made by Edward Webb & Sons, Ltd., Worcester, Eng. The goathair might be more knitable but might not answer the inquirer's purpose.

The purpose to which the horsehair is to be put is not stated. In case the idea should be to make flesh-rubbers it may be said that those sold in this country (England) are woven. Rubbing bands and gloves are woven with a pile which in some cases is cut and in others left in the loop. A pleasing appearance is lent them by striping in black, brown and white hair. James Strand.

Difficulty With Sizing.

Editor Textile World Record:

I have been troubled lately with bad work from the slashers. Quite often the yarn will come out of the size box full of small, hard particles, sometimes the whole width of the yarn and at other times in large patches, which have the appearance of hard size. The size box is cleaned out twice a week, but this does not remedy the fault. In about three days there is a solid cake of size about 1 1/2 inches thick on the bottom of the box. It seems to give the most trouble when we are running very heavy sets of yarn, in other words, a large number of ends. We use corn starch and a sizing preparation with a little bluestone and alum. The size is run into an iron box and then pumped into the size box. We use water from a creek, that runs by the mill, without filtering. When the size is left in the iron box mentioned above for ten or fifteen minutes it becomes lumpy. We cook the size about thirty to forty minutes after it comes to a boil.

Phidias (1257).

If the size is well prepared, and kept at a temperature of about 190° F., while in the size box, it is rather difficult to account for the cause of the size separating into small, hard particles. It is quite possible, however, that the size is not kept hot enough while in the size box, which may be caused by the position of the heating pipes in the size box not being correct, or they may have become clogged up, especially the small holes through which the steam escapes in order to keep the size heated to the right temperature. These heating pipes should be about one inch from the side walls of the size box, and the small steam holes should be facing toward the centre of the box.

It is a very good plan to have a thermometer handy so that occasionally the temperature can be noted, and kept as uniform as possible. If the steam is not kept continually blowing from the heating pipes, there will be a poor circulation of size in the box and the heavier part will fall towards the bottom. Then when the size becomes low in the box the immersion roll will perhaps be lowered so much that it will cause the sheet of yarn in passing to pick up patches of this thick jelly like size, causing poor work. To be sure of good results it is well to have the interior of the size box lined with copper, and the pipes from the size kettle to the size box should be of brass. If the following size mixture is tried and kept well heated there should be no trouble:

110 gals. water,
60 lbs. of corn starch,
5 lbs. of best tallow,
1 gill of turpentine.

If the size still continues to form into small, hard particles, the trouble must be caused by the water used, which may contain traces of lime or alum, causing a chemical action upon the starch in the mixture.

Forfar.

The sizing troubles complained of by "Phidias" may be from several causes.

1st. The stirrers should be kept going in size kettle with enough steam on to keep size from gelatinizing or congealing.

2d. The size run into the iron box may get lumpy from chilling if no agitation is used, nor any steam is run in to keep it at a temperature to keep it in liquid form.

3d. The size kept in the size box over night gets chilled and congealed and unless thoroughly dissolved by heat and stirring, will form a cake at the bottom which gets harder each night.

4th. The small, hard particles complained of may be caused by stirring and breaking up the hard, congealed size at bottom of the box, or by hard gum from the top squeeze rolls dropping off the ends and floating in the size and finally going through the rolls on the yarn and causing the appearance of hard size.

5th. The length of time the size is cooked may have a bearing on its action in the iron box. If there is eight ounces of starch to the cooked gallon of size, thirty to forty minutes would be sufficient to cook; if ten to twelve ounces, it would take an hour to an hour and a quarter, and if sixteen ounces, at least two hours to bring out the full starch value.

6th. Let your correspondent run the size in the size box as low as possible at night, and in the morning boil it up and get it thoroughly dissolved before starting.

7th. Thick boiling starch gelatinizes much more quickly than thin boiling starch and where size is required to stay liquid or thin for a long time, thin boiling or fluid starches are used.

The blue stone is used to make the starch boil thin or as a fungicide.

The alum precipitates the starch, thickens it, preserves the size.

The sizing compound may congeal when chilled in the size box and contribute to the lumpiness and precipitation of size on bottom of size box. An analysis would show this.

Tramore.

Waterproofing Braided Cord.

Editor Textile World Record:

Kindly send recipe for waterproofing braided cotton trolley and tiller cord like enclosed sample; also the way to use it. Fairfield (1260).

Our special English correspondent replies as follows:

Enquiries among machine makers show that no machine to do this kind of braiding is made in England and apparently none is used here. To my regret, therefore, I am unable to send details of the impregnating tanks to use.

To judge from the small samples sent, an attempt has been made to waterproof by waxing after braiding. There is every reason to suppose that the treatment ought to be applied to the yarn in course of braiding, by passing it through a melted composition of wax. I am informed that for the purpose of waterproofing insulated wire a low grade of paraffin wax is used and in order to cause the wax to harden on cooling gypsum is used along with it. If the wax and gypsum mixture be too brittle it may be necessary to introduce a softener into the melting pot. Tallow, soft soap and soluble oil are named by a chemist who is used to waxes as suitable agents for this purpose.

Strand.

Paper Yarn for Tying Wool.

Editor Textile World Record:

I am informed that paper yarn has recently been introduced in France for tying fleeces. This yarn dissolves during the process of scouring and there is, consequently, no danger of damaging the goods by reason of foreign vegetable fibers becoming mixed with the wool. Can you give me further particulars regarding this yarn?

Sumner (1262).

This inquiry was referred to our French correspondent who made diligent inquiries but failed to get information rgarding the yarn in question. He found, however, a new method of baling wool in bags lined with paper cloth, an account of which appears in this issue.

Open Mesh Fabric.

Editor Textile World Record:

In your January issue you published an inquiry and photograph of a heavy netting and your correspondent wanted to know where he could get a loom for weaving this. We build these machines and have just completed an order. Our machine makes quite a variety of patterns in this kind of netting up to sixty inches in width.

John Eppler's Machine Works,
Philadelphia, Pa.

Knitting Department

THE KNIT GOODS SITUATION.

The past month has been a very active one among the manufacturers and agents in New York City. There were a great many buyers in the market to attend the meetings of the Buyers' Association and the banquets that were held in connection with it and from all that we can learn, they placed orders quite generally on all classes of winter weight goods.

It has been said from time to time that the trade will drop men's fleeced underwear, but manufacturers who are making fleeces all report a very satisfactory business as having been placed so far for 1911. Although the trade on men's ribbed combination and two-piece suits has grown largely each year, yet the more important manufacturers of flat wool goods claim to have plenty of business on their books now so that they can feel that they "live on easy street" for the balance of the season.

We do not hear of any manufacturers being sold up and out of the market, but there are several who claim to have 70 to 75 per cent. of their production contracted for, and a few who go so far as to say that they do not care for any further business under present conditions.

It is intimated that a curtailment of the production of cotton will prevent the lowering of yarn prices that some knitters have been looking forward to in order to show a profit at the prices they have been naming on their goods.

Ladies' ribbed vests and pants continue to be offered at $2.00 and one of the larger factors in this class of goods who sold quite a quantity early in the season at $2.10 has since reduced his price to $2.00 to hold his orders.

The trustees in charge of the MacKinnon Mills are offering a six-pound garment at $2.00 made of a good quality of cotton yarn, an improvement over the garment made in former years at this mill which was made of a waste yarn. They also make the extra sizes at $2.25, running about 6 1/2 pounds to 6 3/4 pounds in weight. Ladies' seven-pound goods are made in the same mill and are being offered at $2.37 1/2 with the extra sizes at $2.62 1/2. They are also making a men's twelve-pound fleece which they are offering at $3.42 1/2, although it is understood that 500 or 600 cases of the same weight goods made of yarn that was carried over was disposed of at $3.37 1/2 early in the season. They also make a thirteen-pound fleece at $3.62 1/2, and a line of children's goods, weighing 6 3/4 pounds on size 32 at $1.17 1/2 for size 16, rise 12 1/2 cents.

The Alliance Knitting Co. have brought out a new number in ladies' eight-pound bleached ribbed vests and pants with silk trimming in imitation of hand work at $3.67 1/2, and we are told that buyers have bought the line quite freely. This concern has installed a new bleaching plant to improve their production.

In line with the increased demand for men's combination suits, it is noticed that many calls are made for drop seats, and it is predicted that this will become an important feature with this line of merchandise.

The American Hosiery Co. have already stocked several numbers so made and some of the importers of German goods are showing samples for the coming season made with drop seats.

The Piqua manufacturers of men's combination suits have not as yet shown them with drop seats regularly in their lines, but state they have been asked to make special orders for quite a good many during the past season.

It is claimed that a drop seat in a fair quality of worsted garment adds about $3.00 per dozen to the cost, but it is quite certain that notwithstanding the increased expense, it will become popular.

The Wright's Health Underwear Co. are showing a line of suits made of mercerized and worsted yarns with fancy striped col-

larettes at $18.00 per dozen which are selling freely and which add some spice to the line.

HOSIERY.

The hosiery business as a whole lacks life, and while a great many buyers have been in the market recently, the sellers have been generally disappointed in the volume of business placed. It is not that lines are being curtailed, but that orders are placed in much smaller quantities. This is a natural sequence of similar methods pursued by the retailer, who is buying "from hand to mouth," in place of taking generous quantities, as formerly.

It is generally believed that this method of buying can only result finally in a shortage of merchandise and disappointment for such buyers as are figuring on being able to replenish their stocks quickly by reorders.

Makers of fleece lined stockings report a very good business as do also those of wool and cashmere, and many of them are comfortably sold up.

The prices of fleece lined goods, both seamless and fashioned are a little lower in price than last season and this may have had quite a little to do with the good business on them.

Prices of wools and worsteds are much like those of last season, but qualities are claimed to be superior.

It is on staple cotton goods that the buying has been light, and in men's cotton half hose especially, it is rumored that the buyer that would buy a block of such goods could virtually name his own price.

Despite the fact that raw silk is going up, prices of silk stockings and half hose are gradually declining with an undercurrent of feeling that they will tumble still further later on.

Half hose made of spun silk may now be had in all colors at a figure as low as $1.85, and they are well made and good looking merchandise. Some very large orders have been placed on them and they naturally curtail the volume of business that would be done on lisles and cotton.

Full fashioned silk half hose may be bought around $3.75.

There is some business being done on fancy half hose and a strong effort being made to make them popular again, but without very much success.

Even embroidered silk half hose and stockings are not being taken up, excepting very gingerly.

A plated silk stocking for women is being made to sell at 35 cents over the retail counter, and an infants' silk plated ribbed stocking to retail at 25 cents a pair.

The business in silk hosiery in this country is having its effect on the fine cottons and lisles made in Germany, and mills there are running only three or four days a week on this class of goods. The only makers there that are running full time are those making lace stockings, and they are reported as doing a very big business.

FULL FASHIONED KNITTING.

BY PAVONIA.

In explaining the fashioning motion we will begin at the same point as when we described the knitting cycle. Assuming that the shogging has taken place, and the rollers are all resting on the fashioning cams, the cams being in line with all the rollers which impart the fashioning motion, the needles and sinkers will perform a different series of movements in consequence of the shogging having taken place. By the shogging operation the clutch has been withdrawn from the small beveled gear, leaving the drawing apparatus, carriers, friction boxes and slur-cocks still and locked, either by the friction brake band, as explained, or by other means.

Until a few years ago few machines even of the same build had the same adjustments. With the perfection of a system whereby all parts of the machines can be turned out uniform in structure, it is now possible to get machines almost the exact counterpart of each other, both in action and construction. The machines can be assembled by mechanics, and adjusted so they will operate with uniform sets of cams. Whittling out the proper action by a knitter is now done on experimental machines only.

Starting at Fig. 59 we will trace the needles up and the sinkers back. The nar-

rowing points stand in the position which they always maintain during the knitting process. To arrive at the position shown at Fig. 60 the narrowing machine has descended, carrying the points down behind

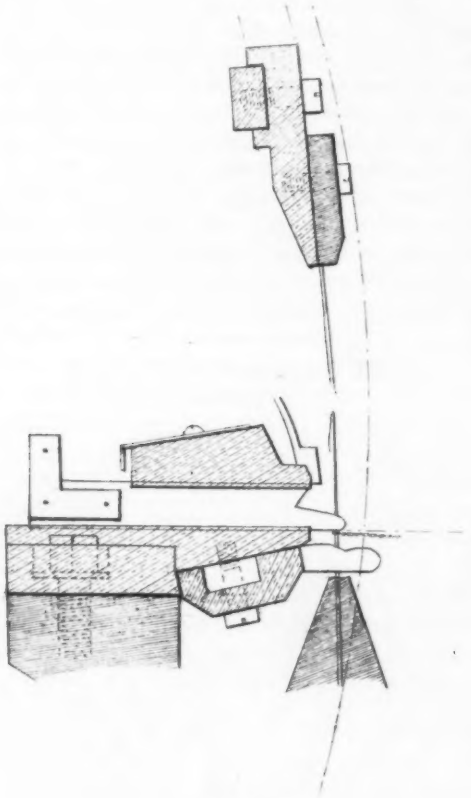


FIG. 59.

the needles on which they are to mesh. The needles have also moved downwards while the sinkers have taken a forward course. It requires the more perfect timing of the different motions to gain good results in the narrowings than is necessary in the knitting. With the bringing into action of the narrowing machine, there are five different actions, each one depending on the accurate adjustment of the other for its successful operation. All these actions have been explained. The relation of the sinkers to the narrowing points at the point, Fig. 59, is deemed of more or less importance by the different experts. To appreciate the value of a correct adjustment of the parts at this point, it is only necessary to recall that there are in the neighborhood of 2,500 narrowing points plunging into or between the moving sinkers. On 39 gauge machines, the distance from the sinkers to the center between the sinkers where the points enter is but 1/52 inch.

If the rods carrying the narrowing points should be displaced but one fifty-second of an inch, the points would come down on the

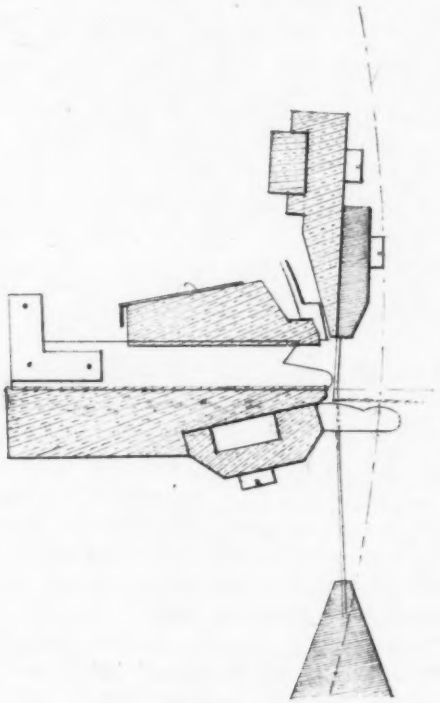


FIG. 60.

sinkers instead of between them. There are no guides in the shape of slots whatever into which the points slide, they being entirely free and unaided as they stand above the moving sinkers and needles. One end of course is fast in the point-holder or finger which is attached to the long rod. If a point strikes a sinker in descending, the point either breaks or bends, and in either event is

rendered useless. The mechanical construction of the machine is such that the liability for a displacement of the narrowing-point rods when in proper working order is very remote. All side motion is stopped when the points are plunging downward, as the steps, either by worm or cam action, are always from center to center between the sinkers, trouble from this source is rare. There is, however, a feature of great importance connected with the Cotton machine, which has no doubt in some degree retarded the development of this industry in America. When the Cotton machine was invented this difficulty was not serious because the machines were of short length and the machine was developed where the changes in temperature were not sudden nor severe. Every time that extra sections were added to the machine this difficulty was increased until now the machines are so long that most builders are designing their narrowing machines so as to overcome it.

The trouble arises from the contraction and expansion of the narrowing point rods. These rods are very thin, 1/4 by 1/2 inch, and about 30 feet long. They are being constantly thrown out of gauge by the changes of temperature. The temperature of these light rods changes more quickly than of the heavy parts. The consequence is that when the change occurs, the narrowing rods lengthen or shorten almost immediately, while the heavier parts respond more slowly to the change. It is while the parts are expanded or contracted unequally that the difficulty exists. When they have acquired the same temperature the trouble ceases. Almost every practical full-fashioned knitter will agree that contraction and expansion on the large machines cause more trouble than all other things combined. When heat is turned suddenly into a knitting room, the narrowing machine rods immediately begin to expand. This is noticeable at first by some effect on the fabric, the points failing to mesh properly on one or two needles. As the disarrangement becomes greater drop stitches occur on account of the needles missing the points.

Fig. 60 shows the point where the contraction or expansion becomes apparent to the knitter, and where adjustments of the narrowing-machine are generally made. To gain a clearer idea of why the contraction or expansion causes trouble, we will consider the side motion more fully. Suppose the Cotton machine had but one section and was constructed to make stockings. The fabric would be started on full width and as the narrowings were made the points would move towards the center of the section. The left finger would move to the right and the right finger to the left. Thus it requires at least two narrowing-point rods to do any kind of fashioning on both sides of the fabric. The apparatus governing the right side point rod is placed on the right end of the machine and the points on the left side is actuated from the left end. As more sections have been added to the machine, the points on either side for each section have been attached to the lengthened rod which was governed from that side. On an 18-section machine there are 18 fingers all connected on one rod, one working on the right side of each section, and actuated from the right end of the machine; while another rod carries 18 fingers which work on the left side of each section and are governed from the left end of the machine.

On a single section machine the expansion and contraction would be very slight indeed and not enough to throw the points out of gauge with the needles. The points at the end of the machine from which the rod is worked are affected only slightly, in the same degree as would a single section machine. In the second section the effect would be twice as great because of the greater distance from the end. The difficulty increases with each succeeding section. As the expansion is all one way the difference in the expansion between the first section and the eighteenth will be in the ratio of one to eighteen. The expansion of a rod 30 feet long with an increase of 10° F. in the temperature would be .000006 in. $\times$ 12 $\times$ 10 $\times$ 30 = .0216 in., or over 1/50 of an inch. The distance from the center of the needle to the center of sinker on a 39 gauge is 1/52 inch. It is apparent from this that a

change of 10° F. would carry the end points beyond the intervening sinkers. It is this difficulty that has led to placing the narrowing-point governing apparatus in the center of the machine. The center is the proper place for it from a technical point of view, for naturally the expansion of the entire machine is from the center outwards. If the rods were allowed also to expand from the center towards each end instead of from one end to the other, most of the expansion trouble would be eliminated. Although some large machines have been made in this manner, they have not become popular. A device which promises to displace the long narrowing-rods is being manufactured by a number of different builders. By means of a right and left worn gear, the rods are made to work both in and out. Both narrowing rods are governed from one end. With this arrangement the entire equipment of narrowing-points on both sides could be operated from either end of the machine. Either of the worm-gear arrangements could be dispensed with and the work all done from one end if the rods ran the entire length of the machine. The double acting worms are made, however, not for the purpose of operating the whole machine with one worm, but to divide the narrowing-rods so that one-half of the narrowing device can be manipulated from one end of the machine and the other half from the other end. Instead of one end governing one long rod, it is under the new arrangement made to operate both the rods on the half of the machine on which the worm is placed.

The rods being placed in the center, each end governs the points, both left and right, on one-half of the machine. This reduces the expansion and contraction one-half, but it reduces the liability to make bad work to a much greater degree. Up to a certain point the expansion is not a serious difficulty, but beyond that it becomes very troublesome. This point is seldom reached with the half rods, as they constitute practically two separate narrowing machines, each one being subject to the fluctuations of the part of the machine on which it operates. A machine very generally used in America today does not have the divided narrowing machine. The success of this machine cannot be questioned, it having been demonstrated by many years of practical operation. The conditions under which this class of machinery can be operated to the best advantage are very thoroughly understood and special pains are taken to keep a constant temperature so as to obtain the most successful results. There are but few knitters who do not prefer to operate the machines having the single long narrowing rods, because they are less complicated and simpler to operate, providing the narrowing machine can be relied upon to stay in uniform adjustment after once properly set. Where precautions are taken to prevent sudden changes the long rods are not a cause of much complaint.

In order to secure a better adjustment of the narrowing-points and sinkers some machines have their cams shaped so that the points reach the position at Fig. 60 as the upper nose of the sinkers are brought forward. In this instance the narrowing points are to a great extent safeguarded from striking the sinkers, because, before the narrowing points reach the dangerous position, the noses of the sinkers push forward and form a guide from the action immediately following and while the points move downward still further.

Fig. 61 shows the points, needles and sinkers when the meshing takes place. Here the needles have moved forward and buried their beards in the groove of the narrowing-points, while at the same time the tips of the narrowing-points have engaged and buried themselves in the eyes of the needles below the beards. Figs. 61 and 61a shows the positions before and during the contact. During the contact between needles and points the sinkers are well forward. When the narrowing points are in the meshing position they fill up most of the space between the sinker, s. Notwithstanding this, unless the points are well in the center of the sinkers when descending, some of the needles will fail to connect. The function of the sinkers

when brought forward is to give the needles as much side support as possible when they begin their interpression with the needles, thereby making them more positive, and often being the means of guiding those points and needles which otherwise would miss.

Although there are thousands of these points meshing with the knitting-needles and although this operation takes place twice a second, for the points must mesh on the needles twice in each narrowing, a good knitter almost invariably turns off perfect work. Being adept at plyering needles and understanding the importance of keeping the narrowing points in line with the needles and in the correct position to give the proper pressure to the needles during contact, it is not uncommon for such a knitter to run for days without a single point failing to mesh. There are about fifty thousand different engagements of needles and points in a single set of eighteen stockings. The delicacy of the adjustments when the needles and points come together might be further emphasized by stating that in many instances on very fine machines the shining of the sun on the narrowing-point rods will cause some of the points to miss the needles. The first glimpse of sunshine on a machine is the signal for many knitters to draw down the blinds.

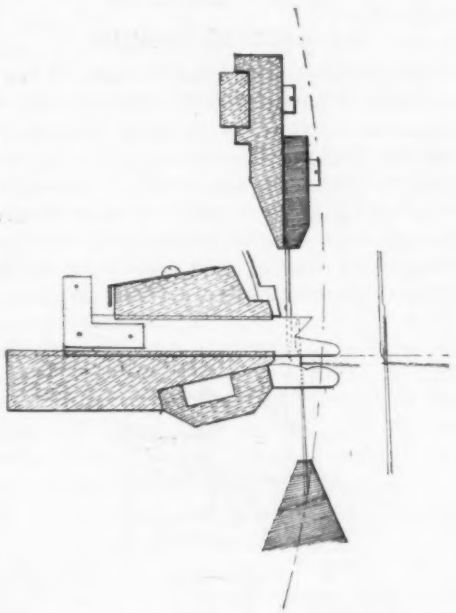


FIG. 61. FIG. 61A.

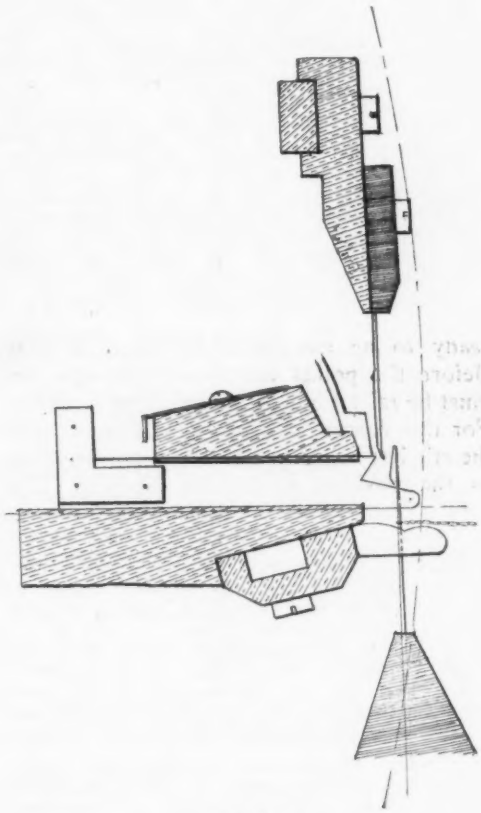


FIG. 62.

Looking further into the motion we find the fabric resting on the needles below the tips of points and above the knocking-over-bits. The fabric cannot sink lower on the needles than its position above the knocking-over-bits, so, when the needles and narrowing-machine descend, the points and needles being interlocked and acting as one single solid piece, they slip down into the loops. The needles withdraw themselves from the loops at the same time as points insert themselves into the loops. Fig. 62 shows the position of sinkers as the points

and needles move downward through the loops. At the point shown in Fig. 63 the needles begin to move away from the points, having withdrawn themselves from the fabric. The loops are now on the points and

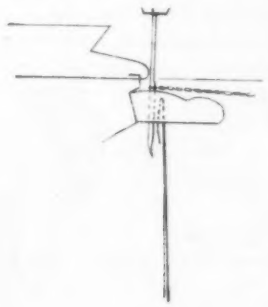


FIG. 63.

ready to be transferred to other needles. Before the points can move sideways they must be raised out of the knocking over bits. For this reason an upward motion is made, the stitches being carried along on the points to the position shown at Fig. 64. The

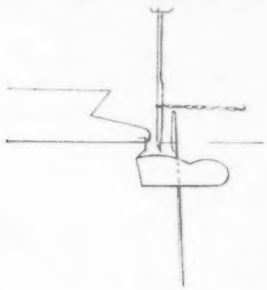


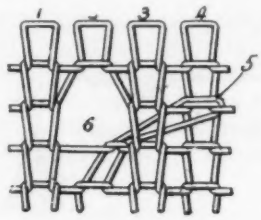
FIG. 64.

needles are also raised corresponding with position shown in Fig. 64. If the needles were not raised the stitches would slip from the points again as they rose. The stitches on the narrowing-points are followed by the needles to prevent this. Fig. 64 shows the position of the sinkers when the side movements occur, after the points are raised from the knocking over bits and the sinkers have moved back sufficiently to clear. The points are free to move either to the right or left, the rod being moved in or out according to whether a widening or a narrowing is to be made. At this instant the narrowing points on a foot machine contain between 2,000 and 3,000 stitches, all of which have been removed from the spring beard needles. To remove one or a few stitches is a simple operation, but a machine that has to pick up thousands of stitches and deliver these stitches again to thousands of different needles, changing relations to every needle from which the stitches are taken or deposited, is certainly not as simple as would appear from a casual look at the product.

(To be continued.)

A KNITTED FABRIC.

The fabric shown in the illustration has recently been patented and is described by the inventor as follows: The principal object of the new construction is to produce an open-meshed ribbed knitted fabric formed by transferring stitches while knitting, wherein the openings are well defined and regular in form, and surrounded by intermeshing stitch-loops which are not distorted in shape



A KNIT FABRIC.

or weakened by displacement. A stitch-loop is from one row of loops across an adjacent row, and causing such loop to intermesh with a row of loops beyond the row crossed by such loop, as will hereinafter be more fully described and subsequently pointed out in the claims.

The single figure of the drawing is a plan view on a greatly enlarged and exaggerated scale of the improved fabric.

The drawing shows four vertical rows or wales, 1, 2, 3, 4, of intermeshing stitch-loops. When the fabric is knit upon a machine comprising a needle-dial and a needle-cylinder, the first row of loops, or wale would be

formed by needles on the cylinder of the machine; the second row, by the needles on the dial; the third row, by the needles on the cylinder; and the fourth row, by the needles on the dial; the wales thus alternating throughout the entire fabric and being drawn to opposite faces of the fabric.

The fabric can be knit by hand or upon a knitting-machine. It is preferably knit upon a dial-and-cylinder machine, the machine being provided with transfer-mechanism, by means of which a stitch-loop upon one dial-needle can be transferred to the preceding dial-needle, as, for example, referring to the drawing, loop, 5, except for the transferring mechanism, would have occupied the central part of the opening, 6, in the drawing. This loop having been transferred from the dial-needle forming the row of loops, 2, to the next preceding dial-needle, which needle would form the loops in row, 4, would intermesh with the row, 4, of loops, and be located alongside of the loop in such row, 4, which occupies the same course of stitches or loops that loop, 5, would occupy if it had not been transferred. The horizontal rows of stitches are known as courses. The vertical or longitudinal stripes formed by the stitches are termed "wales," the stripes formed by the loops which embrace the needles being termed "standing wales," and those formed by the loops which connect together the loops of neighboring standing wals being termed "sinker wales." It will be apparent from the foregoing description that the improved fabric is provided with wales being termed "sinker wales." It will by the transfer of a stitch from one standing wale to another standing wale across an intervening standing wale.

KNITTING MILL NEWS.

New Mills.

*Indiana, Richmond. It is expected the Richmond Underwear Co. will have completed its plant ready to begin manufacturing by the middle of February. Men's underwear and specialties will be manufactured. A. Louis, formerly of Flesh & Louis, clothiers of Piqua, O., will be general manager. A. J. Harwood, formerly superintendent of the Lewis Knitting Co. of Janesville, Wis., will be in charge of manufacturing. The Atlas Underwear Co., Piqua, O., of which L. M. Flesh is president, is interested in the new plant.

*Maryland, Baltimore. Five knitting machines will soon be installed by the new Mt. Vernon Knitting Co. at Chestnut Ave. and 36th St. for the manufacture of men's hosiery. The company has been incorporated with capital stock of $20,000 and the officers for the current year are Charles V. Stinchecum, president; Harry C. Scott, vice-president; and George W. Fort, secretary and treasurer. The officers with I. Whitestone and L. Leon Kirby form the board of directors. The president will be superintendent of manufacturing and attend to the buying. It is expected manufacturing will be started about April 1. The machinery is to be operated by electric power.

Massachusetts, Shelburne Falls. H. R. Ashworth, H. G. Hoyt and H. B. Upton have formed a partnership under the name of the Ashhoyton Knitting Co. for the purpose of manufacturing various kinds of knitted goods, including sweaters, mufflers, neckties and wristers. Machinery will be set up on the top floor of the old cutlery building on Bridge St. The plant will be in charge of Mr. Ashworth, who will resign his present position with the Orange Knitting Co.

*Michigan, Grand Rapids. The new Grand Rapids Hosiery Co. will occupy space in the plant of the Globe Knitting Works for the present. E. A. Clements is president of both concerns. As noted previously, it is planned eventually to build a mill for the new company.

New York, Brooklyn. A plant for the manufacture of knitted neckties will be started up at 320 Bridge St. by Walter Vogt. He is now installing machinery.

*New York, Oswego. Bids will be received shortly for building the new underwear mill of James A. Shufelt. The main mill will be 3 stories high, 50 by 60 ft., and a second structure, 1 story high, to be used for a boiler house and for some machinery, will be constructed. The plant will be located on Syracuse and 4th Sts., and will be completed about next August. It is expected construction work will be started about April 1.

New York, Stittville. The officers of the Stittville Knitting Co. have organized the Adirondack Knitting Co. to manufacture fine balbriggans and union suit specialties. The capital stock is $50,000. Twenty knitting machines will be operated and the product will be sold direct to the retail trade. Wm A. Ainsworth, manager and buyer of the Stittville Knitting Co., is also manager and buyer of the new company.

North Carolina, Vaughan. A charter has been granted the Allgood Hosiery Mill of Vaughan with capital stock of $12,000. M. F. Parker, A. C. Allgood and C. B. Vaughan are the incorporators. Mr. Allgood was formerly superintendent of the Henderson Cotton Mills of Henderson, and a few months ago equipped a plant in Henderson with 10 knitting machines on which he has been manufacturing women's hosiery, selling the product in the grey. C. B. Vaughan heads the Vaughan-Parker Hosiery Mill of Vaughan, manufacturers of seamless and full fashioned hosiery and half hose on 176 latch needle knitting machines. It is

probable the hosiery plant of Mr. Allgood will be removed from Henderson to Vaughan and enlarged.

*North Carolina, Washington. A new industry will be started in the buildings formerly occupied by the Thelma Knitting Mill by J. T. Lewis, who plans to manufacture misses' ribbed hosiery under the name of the Tar River Knitting Mill. The Thelma Knitting Mill removed some time ago to Chapel Hill, N. C. It has been reported previously that Mr. Lewis was interested in establishing a knitting mill at Elizabeth City, N. C.

Pennsylvania, Auburn. A new knitting plant for the manufacture of women's ribbed underwear is being started here by Claude Walborn under the style of the Walborn Knitting Mill.

Pennsylvania, Hamburg. Within the past six weeks Jacob R. Kessler has started up the Standard Knitting Mill on women's ribbed underwear, using 24 cotton yarn. The plant contains 7 knitting machines and 10 sewing machines and is operated under the management of Walter Kessler.

Pennsylvania, Reading. A charter has been granted the Perfect Shape Underwear Co. with capital stock of $100,000. After the organization of the company a line of full fashioned goods, silk, cotton and mercerized, will be manufactured under a new patented process. Temporary quarters are at 440 1/2 Court St., where 1 knitting machine and 2 overseamers have been installed. They plan to greatly increase this equipment as soon as permanent quarters can be secured.

Pennsylvania, Reading. It is reported that a new company to be operated under the name of the Fehr Knitting Company will equip a plant at West Reading to manufacture women's ribbed underwear. The number of machines to be installed could not be ascertained.

*Pennsylvania, Reading. Alfred W. Wolfinger's plant at Front and Washington Sts. is now in full operation. Seventy knitting machines have been installed with 8 ribbers and 15 loopers. Fine gauge mercerized seamless half hose and women's seamless hosiery are manufactured. He finishes the product and sells direct.

*Pennsylvania, Reading. The Oakbrook Hosiery Co., which succeeded the Brookside Hosiery Mills, has begun manufacturing with 40 knitting machines and 6 loopers, operating on 200-needle women's seamless cotton hosiery. Leininger and Eberly are the proprietors. The mill is located at Oak Brook, a few miles from Reading

Pennsylvania, Shenandoah. The Miller Knitting Mills have recently been started up by J. J. Miller, who has installed 6 knitting machines, 2 sleevers and 8 sewing machines, which are operated on women's ribbed underwear, using 22s to 26s cotton yarns. The plant is operated by electric power.

*Pennsylvania, Sinking Springs. The West Lawn Underwear Co., located at West Lawn, 1 1/2 miles from Sinking Springs, has begun manufacturing women's ribbed underwear on 4 knitting and 5 sewing machines, buying 24s to 26s frame spun yarn. The capital stock is $5,000. G. R. Miller is president; Geo. P. Stewart, treasurer, and George W. Bickel, superintendent and buyer.

Enlargements and Improvements.

Massachusetts, Lowell. It has been decided to manufacture hosiery in the plant of the Middlesex Co., and John S. Lawrence of Lawrence & Co., selling agents, and Philip M. Reynolds, formerly treasurer of the Ipswich Mills of which Lawrence & Co. are selling agents, and now treasurer of the Scott & Williams Co., have been added to the board of directors. At the annual meeting of the Middlesex Co. the directors recommended the reduction of the woolen product to its most profitable part, giving up that part which is not profitable and installing hosiery machinery in the buildings thus vacated. Necessary steps to carry this suggestion into effect will be presented to the stockholders at the meeting in February and if their action is favorable Lawrence & Co. will act as selling agents for the new product. On account of the corporation tax law the date of the annual meeting has been changed to the second Wednesday in February so that the fiscal year might correspond with the calendar year as required by the tax law. The following officers have been elected: Paul Butler, president; C. Brooks Stevens, treasurer; George F. Wagner, clerk. The directors include the officers and Adelbert Ames, Jr., Geo. S. Motley, John S. Lawrence and Philip M. Reynolds. Hosiery machines are already being installed in one of the buildings.

*Massachusetts, Malden. Plans have been filed by the Yale Knitting Co. for a 3-story concrete factory building, adjacent to the present mill on Jackson St. It was reported some time ago that this addition would be built in the spring. The Yale Knitting Co. is the new name of the Holmes Knitting Co. Joseph B. Jamieson, 77 Summer St., Boston, is president, and Lester D. Marsh is treasurer. Underwear and sweaters are manufactured.

Massachusetts, Millbury. The Worcester Knitting Mills will be changed to manufacture women's and children's fine cotton underwear. The company is in litigation with Fleitmann & Co., New York, at the present time, and plans in the future to do a direct business. Wm. M. Keepers, 61 Lincoln Park, Newark, N. J., is president and treasurer, and Michael Faron is superintendent. Mr. Keepers and Rufus R. Crane do the buying.

Massachusetts, New Bedford. Following the sale of the Mishaum Knitting Mill to Chas. and Otto F. Pittle, a dyeing plant is being added and they will do all their own dyeing. Manufacturing will be started January 16 on 200-needle mercerized half hose of Sea Island yarns. The product will be sold to jobbers. Chas. Pittle, who has been superintendent for the past six months, will continue in that capacity.

*Minnesota, St. Paul. Manufacturing has been resumed by the St. Paul Knitting Works following the recent fire. Repairs are being made as rapidly as possible and probably some increase will be made in the capacity.

New York, Broadalbin. Work will be started immediately on an addition to the Broadalbin Knitting Co., Ltd., which will double the size of the dye house. The enlargement will be 1 story high, 40 by 60 ft. At the same time the capacity of other departments of the plant will also be enlarged. Last April the stockholders voted to increase the capital stock from $75,000 to $150,000.

New York, Brooklyn. Siedon & Rosenblum, manufacturers of full fashioned sweater coats at 597 Park Ave., under the style of the S. & R. Knitting Mills, are considering making some enlargements. They operate at present 10 knitting and 5 sewing machines.

New York, Clinton. The Clinton Knitting Co. has shut down while a new 50-h. p. engine is being installed, and other alterations and improvements made. It is said that nearly half the coming year's output has been contracted for.

New York, Elmira. The Ironwear Hosiery Co. will move from the present quarters to the new Snyder Mill on Main St. Ten new knitting machines will be added to the equipment.

*New York, Niagara Falls. The loss in the recent fire in the mill of the Visor Knitting Co. has been adjusted for $1,712. Manufacturing is going on and repairs will be completed as early as possible. Twelve knitting machines and 10 sewing machines are operated on men's sweater coats. B. Rautenberg is president and buyer.

New York, Saratoga Springs. In the spring the Olmsted Mfg. Co. will add more machinery. They manufacture fancy knit slippers, caps and toques.

New York, Utica. Construction work will be started at once on a new boiler house for the Utica Knitting Co.

Pennsylvania, Adamstown. A dye house has been added to the Hope Hosiery Co. and the concern is now dyeing and finishing the product. Cotton half hose is manufactured on 72 knitting machines, 12 ribbers and 8 loopers under the management of H. L. Stork.

Pennsylvania, Adamstown. Miller Bros. have increased their equipment to 21 knitting machines and added a dyeing department. A line of seamless cotton hosiery and feet is manufactured. They report a steady increase in business.

Pennsylvania, Bernville. New steam pipes are being laid by the Durable Hosiery Mill from the engine house to the annex looping mill.

Pennsylvania, Philadelphia. Mathias Brothers, who started up a plant at 3679-81 Emerald St., where they manufactured women's fine gauge seamless cotton hosiery, 200 needle goods, on 12 knitters, 2 loopers and 1 sewing machine, have removed their plant to 3560-62 North Marshall St., where they have leased a two-story building and are now manufacturing a line of 240 needle women's seamless silk, mercerized and lisle hosiery. Ten new fine gauge machines will be installed within a short time, arrangements now being made for their purchase. The plant is run by steam and electric power.

Pennsylvania, Reading. The Lewis & Schultz Underwear Co., 619 Spruce St., is operating on a day and night schedule. The equipment has been increased to 20 knitters, 6 ribbers and 32 sewing machines, which they are operating on women's, misses' and infants' underwear. Lamson, King & Co., New York, are the selling agents.

Pennsylvania, Reading. The Invincible Hosiery Mills, John Goelz and C. G. Hunsberger, proprietors, are operating on silk and mercerized seamless hosiery and have numerous orders on hand. The equipment has been doubled and now includes 40 knitters, 14 ribbers and 7 loopers, all running to full capacity.

*Pennsylvania, Schuylkill Haven. New machinery equipment will be installed by J. C. Lautenbacher, proprietor of the Enterprise Knitting Mills, to increase the output at least 33 per cent. He has built an addition, 60 ft. square, as noted previously. Misses' and children's union suits are manufactured. The plant is operated by steam power.

Pennsylvania, Shillington. An increase has been made by the Shillington Hosiery Mills, giving total equipment of 90 knitting machines, 25 ribbers and 11 loopers. Men's cotton and merino seamless half hose is manufactured, dyed and finished. M. H. Fritz is the proprietor and buyer.

*Pennsylvania, Sinking Springs. Several months ago it was reported that John K. Savage would become interested in the knitting plant of Lewis Gring. Messrs. Gring and Savage have formed the Sinking Springs Knitting Mills to take over the old plant of Mr. Gring. In addition to manufacturing hosiery they have installed 6 body frames and 12 sewing machines on which they are making a line of women's cotton underwear.

*Tennessee, Chattanooga. Chambers & Sons, Chattanooga, have received the contract to build the previously mentioned addition for the Davis Hosiery Mills. It will be a 2-story structure, 40 by 65 ft. Huntington & Sears of Chattanooga are the architects.

Mills Starting Up.

North Carolina, Forest City. The Dixie Knitting Mills Co. has been dissolved. C. A. Wilkie, formerly treasurer of the old company, has taken over the plant and stock and will operate it as the Dixie Knitting Mills, acting as proprietor, superintendent and buyer. Seamless cotton half hose, 200-needle goods, will be manufactured on 11 latch needle knitting machines, 3 ribbers and 3 loopers operated by gasoline power. 2/14s to 50s combed peeler yarn will be used. The product will be sold in the grey.

*Oklahoma, Chickasha. It is likely that manufacturing will be started in the plant of the Oklahoma Cotton Mills Co. in a few weeks. The machinery is in place and stockholders have subscribed money to begin operations.

Wisconsin, West Bend. It is expected that the A. H. Dennhardt Knitting Mills will be started up about January 15 and if all the help necessary can be secured they will employ 50 hands in making

fancy knit goods, toques, sweater coats, etc. A. H. Dennhardt is president and Andrew J. Pick is treasurer and manager.

Facts and Gossip.

Canada, Ontario, London. A knitting company from the United States is understood to have leased the Clarence Bldg., formerly occupied by the Gorman-Eckert Co., for the purpose of manufacturing knit goods. It is said the new company will begin operations in the near future with about 48 hands.

Illinois, Chicago. The Earnshaw Knitting Co. has been incorporated with capital stock of $24,000. Arthur W. Underwood, G. F. Earnshaw and Nathan S. Smyser are the incorporators.

*Maine, Brunswick. The Brunswick Knitting Mill will not manufacture for the present. As noted the plant was burned several weeks ago.

New York, Brooklyn. The Eastern Knitting Mills have been incorporated with capital stock of $5,000. A plant was started under this name by Simon Fain at 43-45 Orchard St., New York, and 794 Broadway, Brooklyn, last September. The business has just been incorporated and has taken over the plant of A. Fain, 902 Park Ave., Brooklyn, although this plant will be continued under the style of the Fain Mill.

New York, Brooklyn. An arrangement has been made with creditors by L. Fuchsman & Son, knit goods manufacturers at 66 Greenpoint Ave., and awaits confirmation of the U. S. District Court. It is probable that the company will be doing business again in the course of three or four weeks. The company was petitioned into involuntary bankruptcy August 31 and Jesse Watson was appointed temporary receiver.

New York, Buffalo. F. C. Lowell, 482 Woodlawn Ave., Buffalo, is looking into the manufacture of hosiery with an idea of starting a plant. He is interested in machinery equipment.

New York, New York City. Henry Schanzer will remove from 101 Wooster St. to larger quarters at 594 Broadway, about January 10. He manufactures knit goods.

New York, Philmont. Frank B. Harder has disposed of his interest in the Columbia Mesh Knitting Co. to P. Hoctor of Hudson, who succeeds Mr. Harder as president. At a meeting of stockholders P. Hoctor was elected president and treasurer; P. Mullins, vice-president; Matthew Kennedy, secretary, and J. F. Gangloff, superintendent and manager. There will be no change in the business.

New York, Philmont. The new High Rock Knitting Co., incorporated a few days ago to succeed the corporation of the same name with capital stock of $600,000, has organized with F. B. Harder, president; W. B. Rifenburg, treasurer, and W. G. Harder, superintendent of manufacturing. With the addition of the old Aken Knitting Co.'s plant, which was purchased last September for $71,000, the High Rock Knitting Co. has 22 sets of woolen cards, 8,200 cotton spindles, 127 spring needle and 31 latch needle knitting machines, 61 ribbers and 260 sewing machines which are operated on ribbed interlock underwear, two-piece and union suits. The company employs 700 hands. F. B., W. G. and P. M. Harder are the buyers for the concern.

*New York, Utica. The plant of the Genesee Underwear Co. is still idle, although it is understood the new Lincoln Knitting Co., which is to take over and operate the mill, is preparing to begin manufacturing within the next few weeks. Probably Wm. E. Lewis, president of the Genesee Underwear Co., John B. Whitten, treas., and J. P. D .Lynch, secretary, will continue in the same offices in the Lincoln Knitting Co. as they now hold in the Genesee Underwear Co.

New York, Waterford. The Waterford Knitting Co. has certified the Secretary of State that it has extended its corporate existence twenty-five years. Thos. Breslin is president and treasurer; Chas. C. Ormsby, secretary, and C. L. Mitchell, manager. Wool underwear is manufactured.

*North Carolina, Greensboro. C. W. Hodges, previously reported interested in a project to start a small hosiery mill, is connected with the Carolina Concrete Co. of Greensboro, builders of reinforced concrete bridges. He reports that some time in the future he may be interested in knitting mill machinery, but he does not expect to establish a mill at the present time.

Ohio, Cleveland. The name of the Scharfeld-Norton Hosiery Co. has been changed to the Wovenright Knitting Co.

*Ohio, Dayton. The National Knitting Works Co. has resumed manufacturing following the recent fire. The concern manufactures sweater coats.

*Oklahoma, Chickasha. Stuart Maxwell of Philadelphia has inspected the mill of the Oklahoma Cotton Mills Co. and is reported to be negotiating with the owners to begin manufacturing in a few weeks.

Pennsylvania, Bangor. The U. S. A. Silk Co. contemplates installing machinery for the manufacture of silk hosiery. They are reported as not doing any business at present.

Pennsylvania, Birdsboro. A. K. Clemmer succeeded to the business of W. B. Beyer & Son several months ago and is manufacturing men's and women's hosiery and half hose on 70 knitting machines. The mill is sold up and Mr. Clemmer is buying goods from other manufacturers to fill orders.

*Pennsylvania, Blandon. Nothing has been done as yet toward disposing of the equipment of the Blandon Underwear Works of S. Lauer and organizing a new company to equip the mill for the manufacture of hosiery. The plan may be carried out later, but no changes will be made before the first of April.

Dyeing, Bleaching, Printing, Etc.

BLEACHING COTTON UNDERWEAR.

BY DELCO.

The economical bleaching of cotton ribbed underwear depends on the way the goods are handled and the class of help employed. The machinery required to bleach 500 pounds at one time would be a kier, washer, bleach tank, sour tank, extractor and a drying room. The kier could be made of wood supported with steel bands. A round cement kier, Fig. 1, could be built provided the goods are to be boiled at a low pressure. If the goods are to be boiled at a high pressure, a high pressure kier should be obtained, which will save a little steam and requires less time in the boiling process. Besides the kier a washing machine is necessary. If a washing machine is found to be too expensive, a tank could be made large enough to hold the goods, having an inlet at one end and an outlet at the other, thus allowing a stream of water to pass through the goods until a thorough rinsing is obtained.

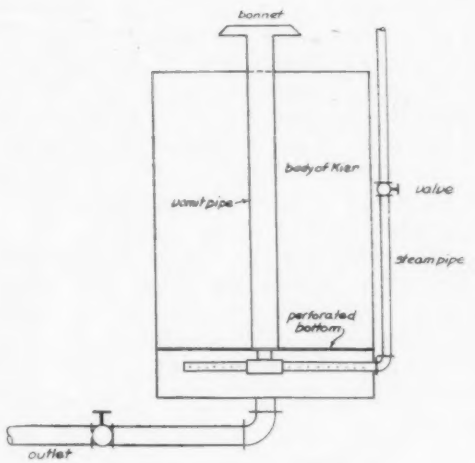


FIG. 1. A ROUND CEMENT KIER.

Two oblong tanks are required, one for chemic and the other for sour. These should be placed in the position shown at Fig. 2 to facilitate the handling of the goods. The chemic and sour tanks should be placed over

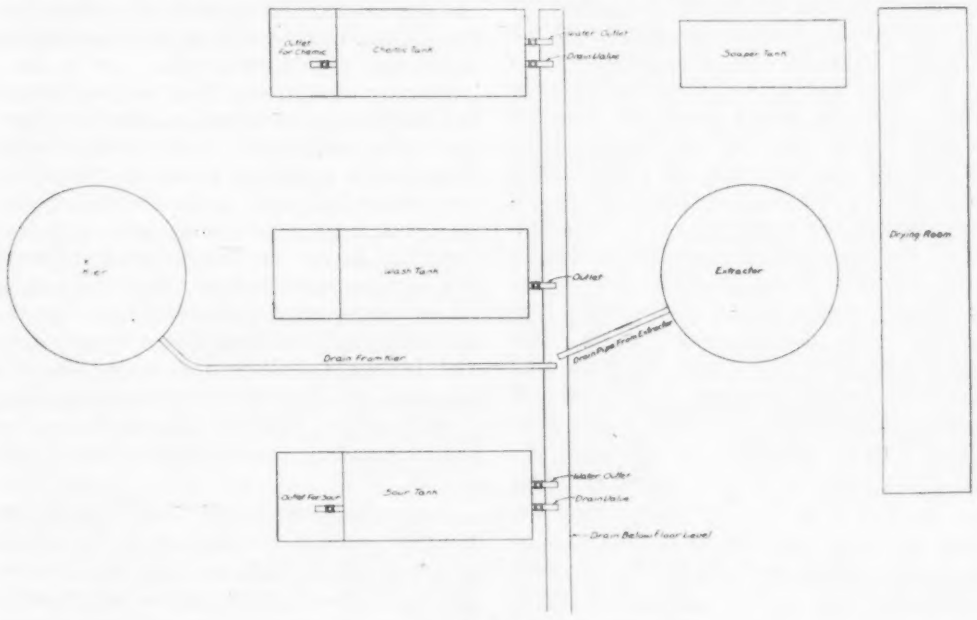


FIG. 2

a well, the chemic and sour liquors being diluted to the right strength in the well. An outlet pipe is placed near the bottom with a valve to draw the liquor off into the well after the goods are white enough. The valve is closed again and the tank filled up with water, which passes through with the top valve open. When the goods are washed sufficiently they are put into the other tanks. If the machines are laid out as shown in Fig. 2, the drainage all flowing into one central drain, it will be found that it will be a very convenient arrangement.

The following is the manner of bleaching. Thoroughly saturate the goods with water, pack evenly in the kier and not too tight, close the outlet valve underneath the kier, and put in the following solution, which must be thoroughly dissolved before being used in the kier:

100 lbs. goods,
½ lb. soda ash,
2 lbs. good soap or bleaching paste.

Dissolve the ingredients and put in the kier, filling up with water until the goods are barely covered. Turn on the steam and boil for 5 to 8 hours according to the quality of the goods in the kier. When boiled sufficiently, open the outlet valve and draw off the dirty liquor, then turn on the cold water and give the goods a wood wash in the kier, filling up the kier two or three times and then drawing the water off. Lift the goods out of the kier and rinse in the washer or tank. Then put in the extractor and extract the surplus water, lifting the goods from there into the chemic bath. After thoroughly immersing the goods let them stay there long enough to clear. Then draw off the chemic and wash with clear water, connecting with the souring tank and using the sour about one-half of one degree stronger than the chemic bath. Thoroughly wash the goods out after the sour bath and place in the soaper, using the best quality of soap. Wash lightly out of the soaper, place in the extractor and dry. If it is necessary to have the goods a pure white, mix a little soda ash in the chemic liquor, using about ten pounds of soda ash to one hundred pounds of chemic powder. This also helps to keep the goods softer. Use sulphuric acid in the sour bath and in all cases use plenty of water in the rinsing. If rule is followed good results will be obtained and without fear of tendering. A little blue used in the last washing helps to whiten the goods, but care must be taken not to use too much.

THE FELTING AND SHRINKING OF FABRICS.

By LOUIS J. MATOS, Textile Chemist.

(Continued from January.)

If on the other hand, there is an unsufficiency of soap and heat, the goods will not felt, but a shrinking will take place with a loss in weight of the goods due to friction which will cause a chafing of the fillers. The amount of soap required for a given set of pieces will depend entirely upon the mixture of wool used and no fixed rule can be given. The best practice is to add a sufficient quantity so that, after running a while in the mill, the pieces are saturated with a thin but not watery lather, and after commencing fulling, keep on adding the soap solution until this clean lather forms.

The ideal soap for fulling is a well saponified hard soap, containing no free fatty matters, and should be free from rosin. A white soap should always be given the preference over yellow or other soaps containing anything but clean tallow as a base. In fulling high class fabrics, the best practice of French and German manufacturers is to use soft, or potash soaps, and it is thoroughly recognized by those who have investigated the processes that the hard, boardy feel and oftentimes disagreeable odors found in cloth is less frequently to be charged against the picker house oils than to the use of undesirable soaps.

The various oils used in the picker house, however, have a bearing upon the quality of the finished cloth, and for this reason, preference should be given to oils that easily scour out or emulsify, the common elaine oil saponified with a proper amount of soda being an ideal lubricant. Potash soaps,

especially in treating fine wools and fine cloth, always leave the goods with a natural softness, and from their nature are extremely easy to remove from the fulled fabrics. They lather equally as well as hard soaps, and are in every way equally as effective in removing the oils and dirt. As fulling soaps, they meet every requirement. The one drawback is their increased cost, but where high class results are desired, they should be employed.

Bad fulling is also the result of bad water, that is, water containing lime. The harder the water, the more soap must be used before a lather is formed, and all the soap so used, being converted into the insoluble lime-soap, is ground by the fulling mill into the cloth, where it remains permanently, causing the boardy feel, which cannot be removed.

Where the quality of the water fluctuates it will be natural to expect that the fuller will have to be on the constant outlook for defects that may not show until the cloths have reached the perches. As 1° of hardness per 1,000 gallons destroys absolutely 1 lb. 7 oz. of dry soap, and as 6° is quite common in many of our mills, and allowing, say 50 per cent. of moisture in an average soap at 5 cents per pound, there is completely wasted 18 pounds of soap in every 1,000 gallons before the additional quantities of soap necessary to do the work are added, and all the fats of the 18 pounds of soap are firmly fixed on the goods to the detriment of the latter. Soft, pure water is the only remedy, and in many instances the value of the wasted soap would pay the interest on the cost of a good water purifying plant.

Goods fulled before dyeing do not require the same care that must be given those dyed before fulling, for the reason that the latter are liable to suffer somewhat in shade. At the present time the dyer is able to use many colors that when properly applied to wool in any stage of manufacture will resist severe fulling. This alone is not the only thing to be considered, but what condition is the fiber in? Colors best suited for wool dyeing to resist fulling are those applied to wool in connection with a chrome mordant applied by one of the three well known methods now much employed. Wool properly dyed should impart no color whatever to warm soap when worked with it, but should any distinct traces of color show by such treatment, it means that the goods were not thoroughly rinsed after dyeing, or that the color is somewhat soluble in an alkaline soap solution, defects, the correction of which is obvious.

Regarding defective fulling after dyeing. It is well known that too high a temperature during dyeing, especially as the dyeing of wool is always conducted in acid baths, tends to cause the wool fibers to become brittle and readily disintegrate in the warm soap bath, which prevents proper fulling, so that in dyeing the goods preparatory to fulling, the dyer should consider his processes from the viewpoint of the fuller.

Clean, well scoured goods should always be put into the dye bath, and if they are to be previously chrome-mordanted, the mordanting should be done at a temperature close to the boil, violent agitation of the fabric being entirely unnecessary. Wool does not require an exact temperature of 212° F. to take up chrome from the bath. Overchroming should be avoided—it is caused by adding too much chrome to the bath; it leaves the wool bitter, besides yielding defective shades. Thorough washing after mordanting is necessary, as any excess of chrome carried into the dye bath causes loss of color in proportion. One bath chrome colors yield shades extremely fast to milling and fulling, and without possibility of injury to the fibers so that fulling may be proceeded with as if the material was undyed.

Closely bearing upon good finishing is the possible injury to fabrics which have become tender in working, and while it has been the general custom to charge against the dye house all tender goods as being the result of "to much acid" or some other substance, it is still possible that the initial stock may have a bearing on the subject. Poor stock is sure to cause weak yarn, even if well spun, while good stock poorly spun is just as likely

to yield bad yarn. Strong fabrics cannot be made from poor yarn.

Excessive fulling, generally deemed necessary for some reason, is sure to cause such an amount of wear and tear on the goods in the mill that weakened prices must result, to say nothing of clouded pieces. This is particularly so where the fulling qualities of the wool have been exhausted before the goods reach the fulling mill.

FAULTS IN THE DYEING AND FINISHING OF FABRICS.

BY P. F. CROSLAND, B.Sc.

(Before the Huddersfield Technical College).

I propose to consider some of the faults which show themselves in dyed and finished fabrics, the subject being considered from a dyer's point of view. The words "from a dyer's point of view" are used advisedly, for they excluded a large number of faults, such as the wrong setting of goods in the loom, broken threads, unevenly twisted yarns, and so on, which, while of the utmost importance in themselves, were no concern of the dyer's. I pass such faults as those by, merely contenting myself with recommending them as well worthy of the consideration of the society on some future occasion. In spite of these exclusions, however, the remaining field was so vast that we cannot hope to give it fair treatment unless we have at least some show of system. I intend, therefore, to take the principal faults and then trace them to their possible sources.

First of all comes the question of hard and brittle goods. At the very outset it is necessary to consider the nature of the woolen fiber. Wool consisted essentially of a very complex substance named keratin, possessing many different characteristics. Just as a very complicated machine was liable to break down at a large number of places—indeed its very complexity often caused it to break down—so the substance of the wool fiber was rendered by its very complexity very susceptible to all sorts of treatment. This was both an advantage and a disadvantage. It was an advantage, for example, because through it wool had an attraction for and could be dyed with dyestuffs of widely different constitution, and through it wool had the attraction for chlorine and for metallic salts, which had so widened the scope of the wool dyer. On the other hand this complexity also laid the wool fiber open to attack by all sorts of different chemical reagents. Its acid components, for example, laid it open to attack by alkalis, its basic components laid it open to attack by acids, and, most important of all, the keratin, if subjected to a prolonged treatment with acids, alkalis, and even with steam, was altogether broken down into simpler substances having totally different properties. The milder the treatment given to their material to arrive at a certain result, the better that result would be. The dyer and the finisher who took pride in the work handled the pieces tenderly. If a certain shade was wanted, he got it with the fewest possible number of passages through the dye bath. If the pieces had to be dried, he saw to it that they were dried and not baked. In short, if the pieces had to be subjected to any extreme treatment, he curtailed that treatment to an irreducible minimum, for he knew that every time the fiber was exposed to it, it lost in elasticity, in strength, and in handle.

We now have some guide to help them in the consideration of the possible causes of hardness and brittleness in fabrics. The first cause would be the use of too strong or too hot scouring liquors, for it must be remembered that as soon as the wool was cleaned any further exposure to the alkali was entirely detrimental in its effects. Carbonized wool was never so good as untreated material, but the damage was vastly increased if the goods were not washed off and neutralized immediately after carbonization. There was one particular point in regard to the carbonization process to which he would like to refer—namely, the necessity for a thoroughly efficient neutralization of the acid with a mild alkali. I mention this particularly because if improperly neutralized wool was sent out it was highly probable that the man who would finally have to bear the blame for bad goods was not the one really responsible for them. That was because the

tendering or rotting effect of the acid on the wool was a cumulative one; it went on and on and might not show markedly till the goods were woven. There were many instances on record where carbonized wool has passed the spinning all right, but had become rotten before the yarn was woven. Brittle yarn should always be tested for acid with moistened blue litmus paper before dyeing. A third possible cause of hard and brittle goods is the keeping of the goods in a hot dye bath longer than necessary. A batch which had needed four or five additions to the dye bath before the desired shade was obtained was always harsher than goods which were dyed the correct shade at the first or second attempt. This defect was particularly noticeable with yarn dyeing, and it was no uncommon thing to find that yarn which before dyeing would give 9,000 yards to the pound, would yield after a prolonged immersion in the dye bath not more than 7,000 yards per pound, and that this contraction was accompanied by a loss of some 10 per cent. in strength. I need not dwell on such obvious causes of hardness as over milling or oversharp decatizing, and will pass on to the consideration of loose color and uneven shades.

The chief cause of loose color, which was generally accompanied by cloudiness, was an incomplete cleansing of the wool, whether as loose wool, yarn, or pieces before dyeing. A good washing with a good soap should be sufficient in most cases, but special care should be taken to wash out every trace of soap afterwards, as for many purposes soap was as harmful as grease or dirt. If the shade to be dyed was a very delicate one, or if the water which had to be used was hard, it was advisable to ensure absolute cleanliness of the piece by soap scouring and washing, and then in order to remove all lime soaps to treat the piece with very dilute hydrochloric acid, followed by treatment with washing soda solution and a final washing with water. All this might appear a very troublesome business, but the time taken up was not really long, and it was far easier and simpler, and gave far better results, than cobbling, the more so since the shades for which this treatment was recommended, namely, for vat indigoes and for delicate shades, were the very worst classes of work to have to cobble.

The dyeing of shoddy often resulted in uneven and loose dyeings. Many dyes which were fast to rubbing when dyed on pure wool, cracked badly when dyed on shoddy. One probable, or at least a possible, cause of this was that, especially with shoddy which was previously mordanted in dyeing, the material had become more or less waterproof, and the color was thrown down on the surface of the fiber. Another very common cause of unevenness on shoddy goods was the fact that the topping color did not work well with the original color, in much the same way as the chrysophenine colors, which gave beautifully even shades alone, were almost impossible to work with in mixtures. A dyer who found that two pieces dyed on the same batch in the same bath had comes up uneven in looking over room, might be recommended to examine them for uneven raising, for that produced a markedly uneven shade. Improper milling was another exceedingly common cause of unevenness, and it might be taken as a fixed rule that soda and strong soaps should never be used with delicate shades, especially if the piece contained colored effect threads.

I will now pass on to the consideration of stains, which were, perhaps, the greatest bugbear of the dyer and finisher. Spinning stains were generally due to the use of unsuitable oil for spinning. Oils could be divided into two classes. In the first place they are minerals, such as petroleum, which were not effected by scouring agents, and in the second place what were termed saponifiable oils, which were readily attacked by scouring agents and converted into soluble soaps. It is obvious, of course, that a good spinning oil should contain none of the former kind of oil. Unfortunately, however, petroleum is cheap, and works smoothly, with the result that a good deal of it is used even today in admixture with olein or some other saponifiable oil for spinning purposes.

(To be continued.)

DYEING WORSTED LININGS.

(By our English Correspondent.)

The usual routine of dyeing worsted linings was described in the November issue. This is departed from in certain respects by some dyers. Thus the possessors of a five-hole nip machine will sometimes pass lining cloth intended for light shades through a soap solution before crabbing. To avoid crimps it is imperative that any scouring given before crabbing shall be done with the cloth at width. The preliminary treatment has the advantage of ridding the goods of dirt before they are wound on the crabbing and steaming rollers and it lessens the risk of "watering" the cloth. "Watered ends" are the defect most commonly found in goods of this sort and all the crabber's attention is required to see that the tension, while great enough to bring up the luster, is not excessive and the cause of this defect.

If soaping at width is not possible with the available plant, one has to scour after singeing, and before dyeing, in the manner first set down. The processes may be elaborated further by singeing after dyeing, as well as before dyeing, and by tentering before pressing. These are not indispensable and neither is the addition of the so-called permanent finish, which is obtained by crabbing and steaming after pressing once. Indeed this is a dangerous addition to make where fancy colors are concerned, although often applied to blacks. After the second steaming the goods are again can-dried and again pressed.

The further question is asked of how to avoid shaded pieces. There should be no shaded pieces if the cotton warp is dyed with a color that is fast to steam and acid. Trouble may arise if the cotton color bleeds in crabbing or under the influence of the acid colors used in piece-dyeing the filling. To prevent the appearance of this mischief the use of a sulphide color for the warp is recommended and generally used in England. If the warp has been dyed fast the pieces are ideal ones to handle from the piece dyer's point of view, as is shown by the extreme anxiety of commission dyers to secure this class of business and by the low prices they will accept for quantities of it.

One useful precaution has been observed by the dyer of the pattern sent and it is mentioned for any general value the hint may have. He has dyed his warp to a shade much darker than the filling. This is the way to get the best appearance out of these cross-dyed goods. Even in matching a pattern where warp and filling have to be dyed to the same shade nominally, it is prudent to let the cotton be the darker of the two. The cotton is the duller and it forms the background of the twill. If made the darker it shows off the luster to the best effect and if made lighter it causes the piece to look "skittery" in dye and poorer in quality. It follows as a general rule that the best appearance is to be obtained by arranging for a marked difference between the shades of warp and filling in the first place. The whole effect is richer and likely to be preferred by all who handle the fabrics when they leave the mill.

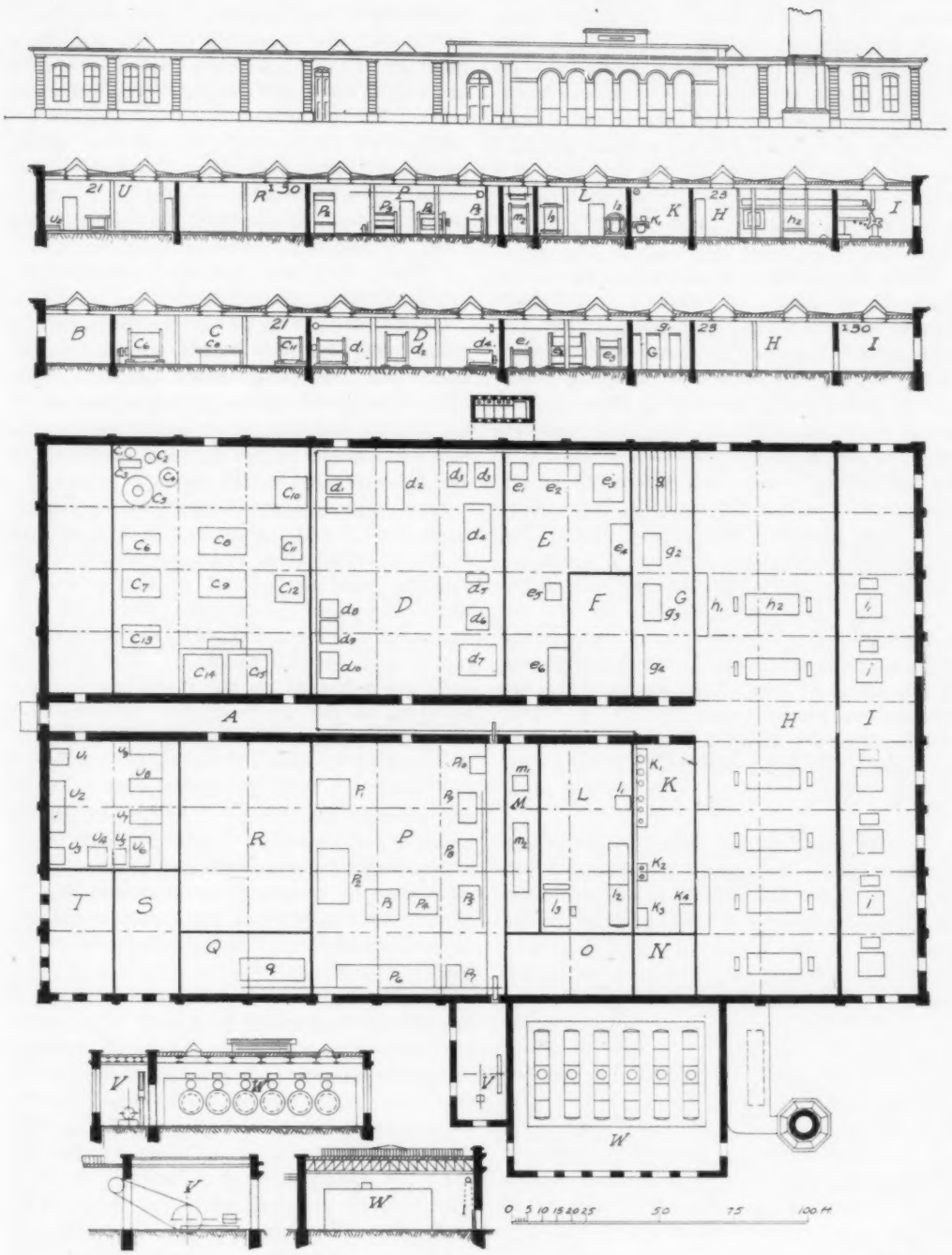
PLAN FOR A BLEACHERY AND PRINT WORKS.

From Uhlands Technische Rundschau.

(Translated from the German by the Editor of the Textile World Record.)

No textile plant involves in its plan so many and so great difficulties as do print works as regards the arrangement of the rooms and machines to meet the requirements of the many related processes, such as bleaching, dyeing, printing and finishing in order that the entire process may be carried on continuously with a minimum of transportation. The accompanying plan for print works has been prepared by Sequin & Knobel, Rueti, Switzerland.

It is a one-story building with cement and monitor roof, the sectional plan being shown at Fig. 2, which exhibits the convenient arrangement of the plant. A passage way runs lengthways through the center of the building and ends in the printing room, which is divided by a partition wall into two unequal parts. The processes are carried on as follows: The cloth from the weave room is stored in the room, B, bleached in the bleach-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ing room, C, and then carried to the dye house, D, to be colored. The goods next pass through the preparatory room, E, and arrive finally in the printing room, I. The printed goods are next subjected to chemical processes such as oxidizing, L, etc. They are then passed to the finishing rooms, P and Q, to be finished, after which they are stored in the room, R. They are then measured, folded, ticketed and packed in the room, U.

When the goods are received in the store room, B, the pieces are marked so that they can be identified after bleaching. They are here sewed together to form a continuous string. After this comes the singeing process to remove the projecting fibers. The pieces then pass from the singeing machine, which is not shown, to the acid bath, c^7, in the bleaching room, C, where they are treated to remove the mineral impurities. After this process, which lasts about four hours, the goods pass through a steaming box, c^3. The goods are next left over night in a 1/2 per cent. soda solution at 120° F., in the tank, c^5. The pieces are then rinsed in the washing machine, c^6, and then steamed in the kiers, c^4 and c^5, so as to bring the temperature of the goods to 212° F. This process lasts for about 2 1/2 hours, the object being to prepare the goods for the subsequent boiling in alkali liquor in the same kier.

The circulation is maintained by the pump, c^1, which draws the liquor from the tank, c^4, forcing it to the kier, c^5. After three hours the goods are rinsed in boiling water in the same kier. The pieces are bleached with chloride of lime in the bleaching tanks, c^{14} and c^{15}. They are then soured for the second time in the souring tank, c^{18}, then well rinsed in the machine, c^6. After bleaching the goods are opened up by the scutcher, c^{11}, from which they pass to the drums of a vertical drying machine. The final rinsing is done in the washer, c^6, and the goods are folded by the machine, c^{10}, in order that they may not become spotted with chloride of lime or acid. Goods are dyed in the jiggers, d^1.

After dyeing the pieces are rinsed in the machines, d^4, d^8, d^9 and d^{10}. They are then extracted in the machine, d^6, and dried in the vertical drying machine, d^7. In the Birch machine, d^5, the goods are passed through a narrow channel and subjected to high pressure. The chlorine machines, d^2, and the silk foulard machine, d^3, are used for special purposes. The goods are prepared in the room, E, for printing. The pieces are returned through the passage, A, folded on the table, e^6, and then taken to the perch room, F, where they are carefully inspected and any imperfections corrected.

Goods that are to be printed must be free from folds and held under constant attention. For this purpose the cloth is rolled under high pressure and constant tension on the rolling machine, e^1. Goods requiring a nap are treated on the napping machine, e^3, and then cropped on the shear, e^2.

Next comes the printing process. Room, G, is used for the manufacture and storing of the printing rolls and color blocks. The printing rolls are stored in the racks, G, while the color blocks are stored in the boxes, g^2. The color blocks are prepared on tables with special machines. The printing rolls are prepared on the machines, g^3, and polished on the machine, g^2. The cloth to be printed is taken to the room, J, and after the printing process the pieces are folded on the table, h^1. The printing room contains six printing machines. The goods to be printed are unwound from the roll, then run between pressure rolls and printing rolls, pass then in a zigzag line between drying plates, and finally reach the closed room, h^2, which is heated with hot air and where the pieces are folded.

The drying attic is behind the printing machine and separated by a wall. The printing machines are driven by small vertical compound engines. It may be well to mention here that recently individual electric motors have been used with advantage for driving such machines, it being possible to vary the speed without difficulty. In this way only the amount of power required is used, thus effecting a marked economy as compared with the ordinary method of driving.

The dyestuffs are boiled and tested in room, K. Room, O, serves for a drug room. Room, N, is the laboratory. In the dye testing room, K, is the boiling tank, k^1, the dye strainer, k^2, and the dyestuff grinder, k^3. This grinder reduces the dyestuff to a finely pulverized form, preventing thick parts and bunches in the dye liquor. The dyestuff is rubbed by brushes through the sieve, k^2. The steaming apparatus, l^2, is in the oxidizing room, L. This machine consists of the cylindrical boiler, in the interior of which is a rolling device driven by a worm gear. The cloth is carried on guide rolls and oxidized in this position. For oxidizing aniline black and printed goods the apparatus, l^3, is used. The hot flues, m^2, in room, M, are used for drying or oxidizing the mordanted or printed goods. The fixing of the colors as well as the cleaning and brightening of the shades and the cleaning of the white goods are accomplished by steaming, treating with tartar emetic or chalk and by chroming.

Finally the goods are finished. This process consists in starching the goods in the machine, p^1, after which the pieces are dried in the hot flue machine, p^2, or on the horizontal drying machine, p^6. The goods are then stretched on the tenter, p^9, and then broken on the breaking machine, p^8. The cloth is next moistened on the spraying machine, p^5, and finally run through the calenders, p^3 and p^4. The goods that are to have a satin finish are run through the beetling machine, q, in room, Q. A silk foulard is shown at p^7. The finished goods are stored in the room, R, packed ready for shipping in the room, U, after having been measured on the machine, u^2, and folded on the folding machine, u^6. They are then taken to the tables, u^7, u^8, and u^9, and finally pressed in the presses, u^3, u^4 and u^5, of which the last two are hydraulic.

Rooms, J and S, are used for offices. The boiler house, W, contains six boilers for supplying steam for the engine and for the dyeing, printing and finishing rooms. The engine room, V, contains a 180 h. p. engine for driving the machinery and dynamo. The power is transmitted as shown in the plan.

Dye Recipes

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation. Subscription price for the Dyers' Supplement $1.00 per year.

Recipe No. 17.

Blue on Worsted Yarn.

Naphtazine Chrome Blue Black on 100 lbs. worsted yarn. First mordant the yarn in a bath made up with

3 lbs. Potassium Bichromate.
3 lbs. Milkoline.

Enter at 120° F., bring slowly to a boil and mordant at a boil for 1 1/2 hours. Then dye in a bath made up with

2 lbs. Naphtazine Chrome Blue Black.
(F. E. Atteaux & Co., 174 Purchase St., Boston.)

entering at ordinary temperature and bringing slowly to a boil. After boiling for 15 minutes, lift the material, cool the bath somewhat, and add

6 lbs. Acetate of Ammonia.

Then dye at a boil for 3/4 of an hour longer.

Naphtazine Chrome Blue Black when applied in this way will leave silk threads white on worsted cloth.

Recipe No. 18.

Pink on Worsted Piece Goods.

Fast Salmon on 100 lbs. union piece goods. Prepare the dye bath with

4 ozs. Tetrazo Chlorine Brown R Conc.
2 ozs. Tetrazo Fast Bordeaux 3 R.
1 oz. Tetrazo Fast Blue 2 B.
240 grs. Alizarine Red 5 B U.
(American Dyewood Co., 115 High St., Boston, Mass.)
20 lbs. Common Salt.

Run in the goods at 140° to 150° F., raise to a boil in 15 to 20 minutes and boil 1/2 hour or to the shade. The above dyeing represents a line of dyestuffs especially adapted for producing on union fabrics fashionable shades of extreme fastness to light. These are fully illustrated in their new color card No. 139 D, a copy of which will be forwarded on application.

Recipe No. 19.

Blue on Cotton Yarn.

Immedial Indogene R R C L on 100 lbs. cotton yarn. Prepare the dye bath with

16 lbs. Immedial Indogene R R C. L.
(Cassella Color Co., 182 Front St., N. Y.)

16 lbs. Glucose.
40 lbs. Sodium Sulphide.
5 lbs. Soda Ash.
40 lbs. Glauber's Salt.

Enter at ordinary temperature, raise to 140° F., and dye at this temperature for one hour.

Immedial Indogene R R C L possesses excellent fastness to washing and light, and dyes level.

Recipe No. 20.

Black on Worsted Yarn.

Nerol V L on 100 lbs. worsted yarn. Prepare the dye bath with

20 lbs. Glauber's Salt.
6 lbs. Acetic Acid.
2 lbs. Formic Acid.

Boil up the bath for a few minutes, then add

6 lbs. Nerol V L.
(Berlin Aniline Works, 213 Water St., N. Y.)

previously dissolved. Enter the material at 180° F., bring to a boil in about 15 minutes, and boil until the bath is completely exhausted.

Recipe No. 21.

Crimson on Cotton Yarn.

Toluylene Red on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Toluylene Red.
(Geisenheimer & Co., 189 Front St., N. Y.)
25 lbs. Common Salt.
1 lb. Soda Ash.

Toluylene Red produces a bright shade of crimson and possesses the properties characteristic of the direct cotton colors.

Recipe No. 22.

Black on Worsted Yarn.

Naphtazine Chrome Black G P on 100 lbs. worsted yarn. Prepare the dye bath with

5 lbs. Naphtazine Chrome Black G. P.
(F. E. Atteaux & Co., 174 Purchase St., Boston.)
1 lb. Formic Acid.

Enter at 140° F., bring to a boil and after boiling 1/2 hour add

2 lbs. Formic Acid

and continue the boiling until the dye bath is exhausted. Finally add

2½ lbs. Potassium Bichromate,
2½ lbs. Milkoline,

and boil from 3/4 to 1 hour longer.

Naphtazine Chrome Black G P is very fast to fulling.

Recipe No. 23.

Green on Worsted Yarn.

Anthra Cyanine Green 3 G L on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Anthra Cyanine Green 3 G L.
(Farbenfabriken of Elberfeld Co., 117 Hudson St., N. Y.)
15 lbs. Glauber's Salt.
5 lbs. Sulphuric Acid.

Enter at 140° F., and dye at a boil for one hour.

Anthra Cyanine Green 3 G L is easily soluble and penetrates well, possesses very good fastness to light, and good fastness to alkalies, stoving and steaming. It is valuable for the dyeing of ladies' dress material.

Recipe No. 24.

Scarlet on Cotton Yarn.

Naphtamine Fast Scarlet R on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Naphtamine Fast Scarlet R.
(Kalle & Co., 530 Canal St., N. Y.)
30 lbs. Glauber's Salt.

Enter at 180° F., and dye at a boil for one hour.

Naphtamine Fast Scarlet R, for a direct cotton color, possesses excellent fastness to light and acids.

Recipe No. 25.

Blue on Worsted Yarn.

Anthracene Chrome Blue R S T on 100 lbs. chrome mordanted worsted yarn. First mordant the material in a bath made up with

3 lbs. Potassium Bichromate,
2½ lbs. Tartar,

working at a boil for 1 1/2 hours. Rinse and dye in a bath made up with

3 lbs. Anthracene Chrome Blue R S T.
(Cassella Color Co., 182 Front St., N. Y.)
4 lbs. Acetic Acid.

Enter the material in the luke warm bath, raise to the boil in one hour, and continue the boiling for about 1 1/2 hours. After boiling for from 3/4 to one hour add 3/4 lb. acetic acid to exhaust the bath.

Anthracene Chrome Blue R S T possesses very good fastness to light, washing, acids, alkalies and steaming and is especially desirable for the production of fast blue shades on piece goods.

Recipe No. 26.

Yellow on Worsted Yarn.

Palatine Light Yellow R on 100 lbs. worsted yarn. Prepare the dye bath with

1½ lbs. Palatin Light Yellow R.
(Badische Co., 128 Duane St., N. Y.)
4 lbs. Sulphuric Acid.
10 lbs. Glauber's Salt.

Enter at 180° F., and dye at a boil for one hour.

Palatine Light Yellow R possesses very good fastness to light and is a very level dyeing color. It has remarkably high coloring power.

Recipe No. 27.

Violet on Worsted Yarn.

Phenylene Violet 5 B S on 100 lbs. worsted yarn. Prepare the dye bath with

1 lb. Phenylene Violet 5 B S.
(W. F. Sykes & Co., 85 Water St., N. Y.)
4 lbs. Sulphuric Acid.
10 lbs. Glauber's Salt.

Enter at 140° F., and dye at a boil for one hour, or until the bath is exhausted.

Phenylene Violet 5 B S shows very level dyeing properties and is remarkably fast to scouring and light.

Recipe No. 28.

Blue on Cotton and Wool Union Cloth.

Union Blue 2320 on 100 lbs. cotton and wool union cloth. Prepare the dye bath with

3 lbs. Union Blue 2320.
(Innis Speiden & Co., 46 Cliff St., N. Y.)
20 lbs. Common Salt.

Enter goods cold and work for 10 minutes, raise temperature to 140° F., and work at this temperature 15 minutes. Then bring to a boil and dye at a boil for 1/2 hour. Shut off the steam and allow to cool for 15 minutes. Rinse and finish. Union Blue 2320 dyes cotton and wool equally well and will be found useful for the production of blue shades upon cotton and wool union material.

Recipe No. 29

Blue on Worsted Piece Goods.

Tetrazo Fast Blue 2 B on 100 lbs. worsted piece goods. Prepare the dye bath with

3 lbs., 8 ozs., Tetrazo Fast Blue 2 B.
1½ ozs. Tetrazo Chlorine Yellow G.
1 oz. Tetrazo Chlorine Orange R.
8 ozs. Brilliant Alizarine Blue L A.
2 ozs. Alizarine Green G Extra.
(American Dyewood Co., 115 High St., Boston.)
20 lbs. Common Salt.

Run in the goods at 140° to 150° F., raise to a boil in 15 to 20 minutes, and boil 1/2 hour or to shade. The quantity of water used in dyeing should not exceed 3 to 4 gallons per pound of goods.

The above dyeing represents a line of dyestuffs especially adapted for producing on union fabrics fashionable shades of extreme fastness to light. They are fully illustrated in their new color card No. 139D, a copy of which will be forwarded on application.

Recipe No. 30.

Black on Cotton Yarn.

Fast Black C B B on 100 lbs. cotton yarn. Prepare the dye bath with

5 lbs. Fast Black C B B.
(Read Holliday & Sons, 11 Gold St., N. Y.)
20 lbs. Salt.

Dye for one hour, rinse and azotise with 2 lbs. of Phenylenediamine.

Fast Black C B B possesses excellent fastness to light and fulling.

Recipe No. 31.

Red on Cotton Yarn.

Fast Red M B on 100 lbs. cotton yarn. Prepare the dye bath with

4½ lbs. Fast Red M B.
(Read Holliday & Sons, 11 Gold St., N. Y.)
30 lbs. Salt.

Dye one hour, rinse and azotise with 2 lbs. of Beta Napthol.

Fast Red M B possesses excellent fastness to light and fulling.

Recipe No. 32.

Blue on Worsted Yarn.

Fast Chrome Blue R on 100 lbs. worsted yarn. First mordant the yarn with

3 lbs. Potassium Bichromate.
2 lbs. Tartar.

Enter at 120° F., bring to a boil and mordant at a boil for 1 1/2 hours. Rinse and then dye in a bath made up with

6 lbs. Fast Chrome Blue R.
(C. Bischoff & Co., 451 Washington St., N. Y.)
1 lb. Acetic Acid.

entering at 120° F., and dyeing at a boil for 1 1/2 hours.

Fast Chrome Blue R possesses excellent fastness to light, scouring and fulling.

New Machinery and Processes

This department is designed to present from month to month a brief mention of new machinery, devices and processes being brought out in this country and abroad, that are of interest to the textile manufacturers. It is not a list of patents but of improvements on the market, the idea being to present to our readers a systematic monthly record of new machinery, etc., of interest to textile mill men.

Whenever possible we endeavor to make a personal investigation of the new machinery and processes described in this department. In the absence of such personal investigation we must necessarily rely upon information obtained from those who control the machines and processes.

We invite machine builders and others to send us such information for this department.

Hosiery Stamping. The Meyercord Co., Bulletin Bldg., Philadelphia, and Chamber of Commerce Bldg., Chicago, are introducing to the knit goods trade a process of stamping hosiery with a brilliant gold stamp by a simple decalcomania transfer process, which requires no machinery, tools or special device. A number of prominent manufacturers have adopted it.

Cosmos Electric Lamp. The Cosmos Electric Co., 136 Liberty St., New York. An improved electric lamp which is said to give a very effective light at a low cost. An account of the lamp will be found in this issue.

Fulling Mill. The James Hunter Machine Co., North Adams, Mass. An improved fulling mill, a description of which appears in this issue. The long experience and high reputation of this company as builders of fulling mills make the new machine of special interest to the trade.

Paper Lined Wool Bags. La Doublana, 86 Rue de Tourcoing, Roubaix, France. A bag for wool designed to prevent jute fibers from becoming mixed with the wool. The bag is lined with a fabric made of paper yarn. A description will be found in this issue.

A Ring Mule. The Patent Ring Mule Co., 3 Omerod St., Burnley, England. A cotton spinning frame with a ring and traveler specially devised for spinning yarn on the cop or bare spindle. The first machine is now in operation in Burnley and arrangements are being made to install a number of them in Lancashire mills.

Filling Stop Motion. Edward Smith & Son, Bradford, England. An improved filling stop motion.

Brush for Pile Fabrics. Tomlinsons, Limited, Rochdale, England. A brushing machine for pile fabrics. It is fitted with discs and roller brushes, which brush the goods in all directions and thus keeps the pile in an upright position.

Card Stripper and Dust Remover. Cook & Co., Manchester, England. An improved stripper and dust remover for cotton goods.

Wool Scouring Machine. M. Fourcy & Cie, Corbehem, Pas de Calais, France. An improved machine for scouring wool by the benzine process.

Skein Dyeing Machine. Planella & Cie, Barcelona, Spain. A machine for dyeing vat blue on skein yarn.

Warp Let Off Motion. Schubert & Salzer, Maschinenfabrik, Chemnitz, Germany. An improved warp tension motion which it is claimed results in more uniform cloth than has heretofore been obtainable.

Spinning Mule. Paul Davoine, Lyon, France. A spinning mule with two rows of spindles which is said to effect a large increase in production.

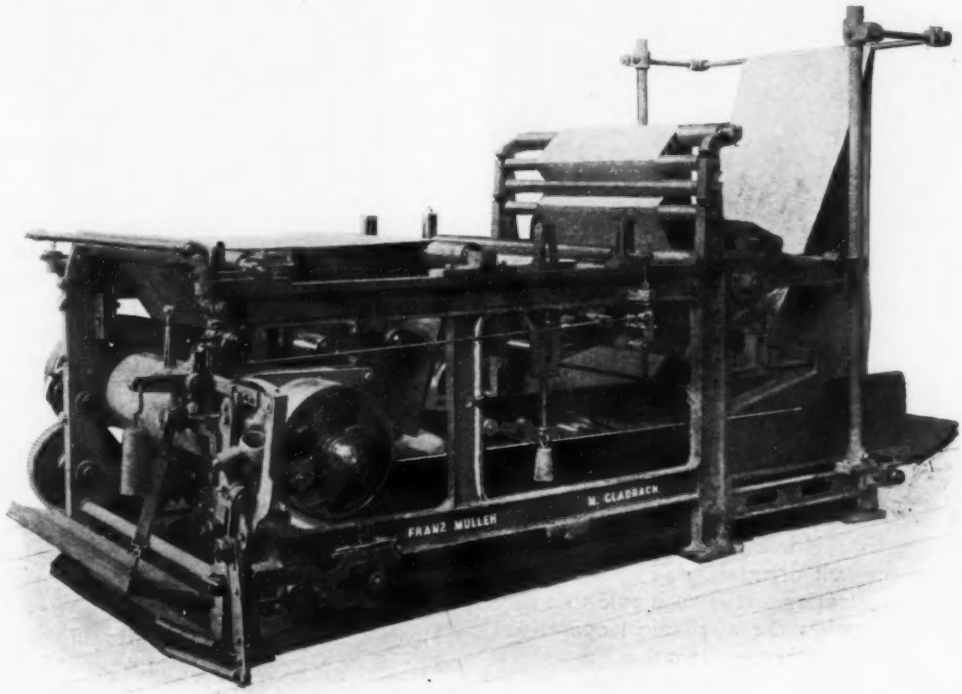
Spinning Mule. Ferdinand Zedlitz, Reichenberg, Bohemia. A device for regulating and controlling the movement of the carriage of the spinning mule.

Loom Picking Motion. Paul Ruthardt, Goerlitz, Germany. An improved picking motion for looms which is said to be an improvement over methods heretofore used.

Selvage Trimmer. Emil Baumhauer, Muelhausen, Germany. A device for removing the projecting ends of filling yarn from the selvage of goods woven on automatic looms.

THE MUELLER VELVETEEN CUTTING MACHINE.

A. W. Buhlmann, textile engineer and importer of textile machinery, is placing a new velveteen cutting machine on the American market. It is constructed by the celebrated Franz Mueller Works, M. Gladbach in Germany, and has met with great success on the other side.



THE MUELLER VELVETEEN CUTTING MACHINE.

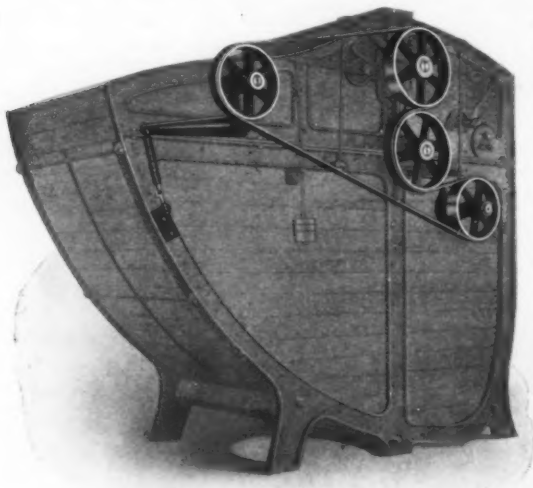
The machine is adapted for slip and race cuts and exceedingly easy to handle. It consists of a strong iron frame, a tentering arrangement with tension regulation and a dragging and tentering roller with a system of guiding rollers. Each individual guiding roller is fitted with a brake gear whereby they can be made rotated or left stationary as desired. There is further a large roller, on top of which a small guard roller is arranged. This guard roller is connected by levers and links with a stopping device. When a seam or other unevenness passes, it stops the machine immediately. There is also an adjusting tentering roller and a dragging roller and folding arrangement of the cloth. The machine has fast and loose pulleys and can be stopped immediately by a special brake. The operator cuts one rib at a time and if experienced, he may use a double knife, cutting two ribs at a time.

The two ends of the piece are sewed together and the cloth passes in the form of an endless piece over the various guiding and braking rollers, the cutter simply holding the knife. The machine is gradually replacing the old hand-cutting tables on account of the large production and ease with which it is handled.

It is essential that the cloth should be as free as possible of faults, in order to ensure perfect cutting of a large production. Judging from the large number of machines already in use in some of the largest velveteen plants in Europe and its labor saving capacity, this machine will no doubt find a ready market in the United States.

THE HUNTER SILENT RUNNING FULLING MILL.

One of the objections to the gear drive on fulling mill rolls is the disagreeable noise which gears necessarily make when running at the high speed required for fulling. It is



THE HUNTER SILENT RUNNING FULLING MILL.

to avoid this noise that the James Hunter Machine Co., North Adams, Mass., have adopted the belt drive shown in the accompanying illustration. It is so simple that the illustration makes the mechanical operation plain without further explanation.

A spring tension is applied to one of the idlers, thus maintaining a uniform tension on the belt under all conditions. Means are provided for lubricating the bearings. The belt drive is applied to either old or new mills. In the latter case everything is supplied by the manufacturers ready to attach to the mills now installed. Wherever used it has been found to improve working conditions in the finishing room and its adoption by the James Hunter Machine Co. is additional evidence of the enterprise of this well known company.

The provincial returns for all Canada for 1909 give the total number of sheep as 2,705,390.

THE ZEIDLITZ YARN TESTING AND RECORDING APPARATUS.

This is a machine that will automatically make a diagram showing the strength and elasticity of a yarn from zero load to breaking point. Just as steam engineers have realized the necessity of the indicator card, so textile engineers have come to realize the need for a similar record of the quality of the yarns that they use. The Zeidlitz apparatus shown in Fig. 1 will do this work with the same accuracy and ease with which an indicator card is made. Fig. 2 is a sketch of the various parts, illustrating the manner in which the apparatus works. Fig. 3 shows the record of strength and elasticity of various samples of yarns that have been tested. As the pull or stress put upon the yarn increases there is a corresponding increase in the stretch, ranging from zero to the breaking point.

Not only is it advantageous to have a record of the strength and elasticity of the yarn, but the fact that the apparatus works automatically, makes its operation very simple and desirable. The action does not depend upon frictionally moving parts, but upon the constant force of gravity. The Zeidlitz apparatus by the nature of its construction eliminates the errors resulting from the use of springs and ratchets. The references in Fig. 2 are as follows:

A, yarn to be tested as it comes off the cop and passes over two half-round pegs at a to take up slack. B, string passing over disc, S, and ends fastened to balance weights, G and M. C, fixture for fastening one end of yarn. D, a clamp attached to M for fastening the other end of the yarn. E, lever with pivot point or fulcrum between the ends. F, a small weight attached to string which passes over a pulley, around top of drum, P, over pulley and is attached to H. The weight of F is equal to the weight of H in water. G, weight attached to string, B, and equal to weight of M when empty. H, weight floating in water, so that its weight floating is equal to F. M, a graduated glass flask, suspended by a cord, B, by an attachment at the top of M. To this attachment, clamp, D, is fastened, so that when M de-

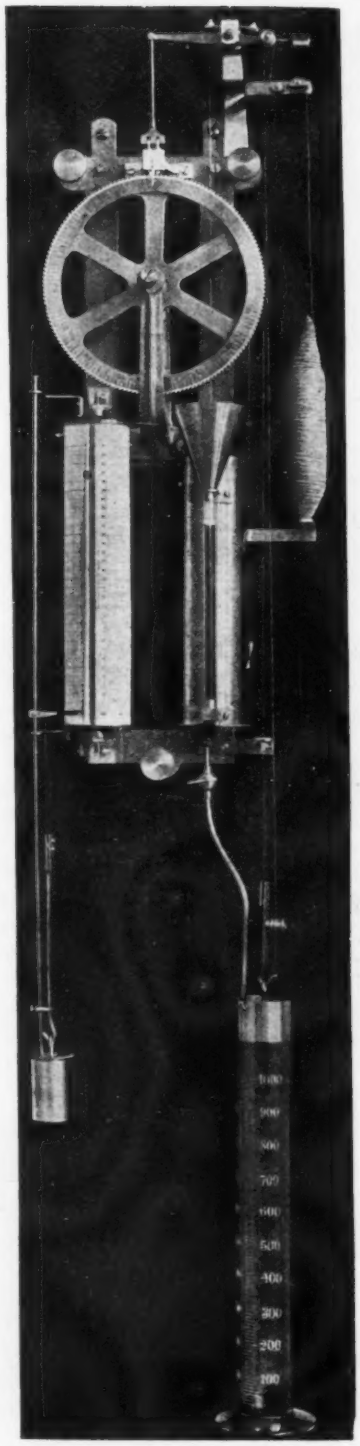


FIG. 1. THE ZEIDLITZ RECORDING APPARATUS.

scends, D also goes down, putting tension on yarn. N, a vessel containing water, in which H is floating. To the top of N, a pulley is attached, acting as a guide for a string attached to F. P, drum which turns on a vertical axis by the pull of the string connecting F and H. Upon this drum is a clamp which will hold a piece of paper

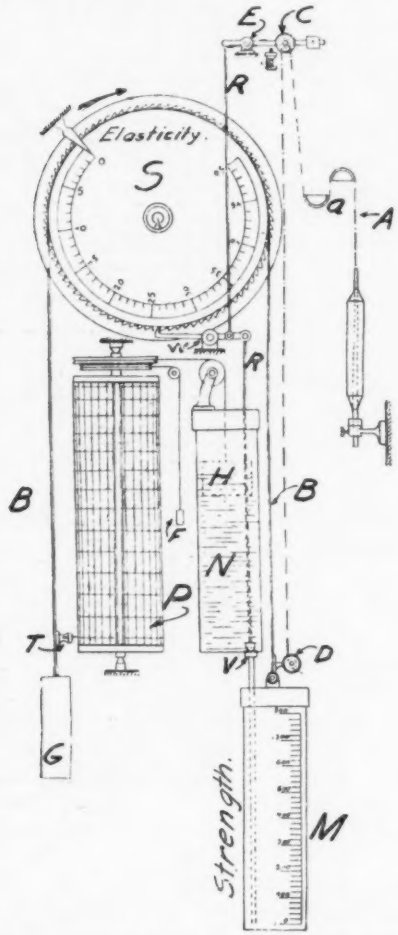


FIG. 2. SKETCH OF THE VARIOUS WORKING PARTS.

wrapped around the drum. This paper, Fig. 3, is divided into coordinates, vertical and horizontal lines at regular intervals. The horizontal lines indicate units and per cent. of stretch or elasticity; vertical lines indicate units of strength. R, R, a string connecting lever, W, to V and E. S, a disc with dial face, turning about the horizontal axis in a

direction as indicated by the arrow and divided so as to read in inches or millimeters of elasticity. The circumference is set with teeth, and B is held also on the circumference by a guide. T, a lead holder attached to string, B, and adjusted so as to press against drum, P, to mark on a chart the combined

The yarn to be tested is pulled from the cop so as to reach around A, and is fastened at C and D. This opens valve, V, and allows the water to flow into M. M becoming heavier than G, pulls down on B and D. Pulling down on D stretches the yarn and pulls down on C, causing the left end of the

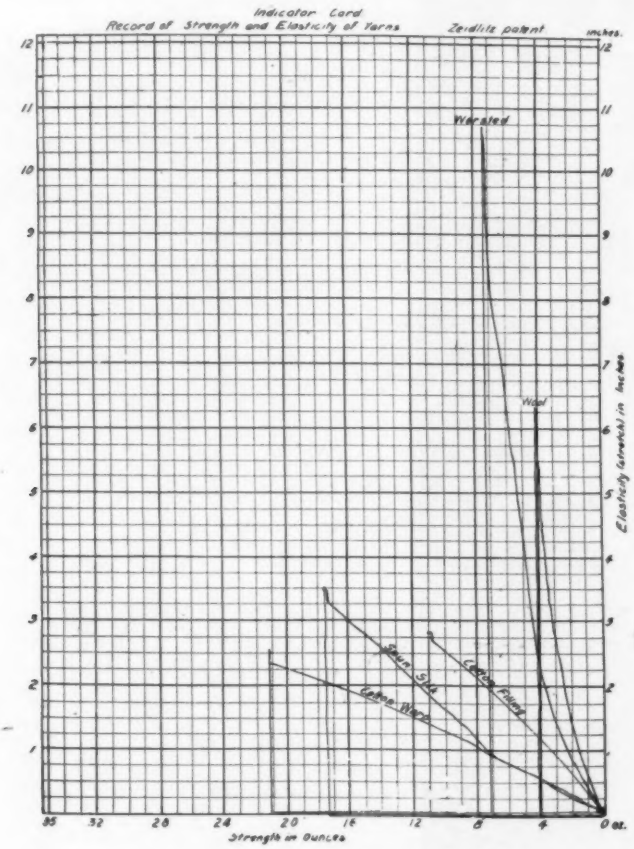


FIG. 3. CHART SHOWING THE RECORD OF STRENGTH.

motions of the string and drum. V, a valve set in the bottom of N with string, R, attached to it. A motion upward on R will open the valve and allow water to flow from N into M. W, a lever which also acts as a ratchet. In order that disc, S, will revolve in direction of arrow, the lever must go down on the left hand side, disengaging the teeth, when string, B, can pull as far as M descends. Z, pointer or dial.

lever, E, to rise. R moving up causes the left end of W to move down, disengaging the teeth, and allowing S to revolve in the direction of the arrow under the action of B. This causes G and J to rise, T marking on drum, P, the amount of stretch of the yarn. The amount that S revolves is proportional to the stretch of the yarn. The water in N receding, H also descends, F goes up, and drum, P, returns under the action of the

string. Pointer, T, marks the combined motion of strings, B, and revolution of P. The extent of the turn depends on the weight of the water, in other words, the strength of the yarn.

As soon as the yarn breaks, O no longer stretches the yarn, C is not pulled down, V is closed, thus instantly shutting off the water going into M, and W, acting as a ratchet, engages the teeth stop, S. Thus the amount of water in M records the breaking strength of the yarn; S records the stretch of yarn; and the chart on P keeps a record of the stretch and strength of the yarn from zero to the breaking load.

Szepesi & Farr, 141 Milk St., Boston, are the American agents for this apparatus.

THE VALUE OF GRAPHIC WATTMETER AS A RECORD OF EFFICIENCY.

BY R. C. LANPHIER AND H. W. YOUNG.

In planning industrial induction motor installations the importance of selecting motors which will give high efficiency is generally appreciated and great care is usually exercised to see that they are so selected and installed as to operate under the best possible conditions of load—that is, as nearly fully loaded as can be determined with the available data. In spite of the most careful planning, however, cases frequently arise where the owner of an electrically driven induction motor plant is disappointed in finding that under actual operating conditions but 70 or 80 per cent. of the rated capacity of generators or transformers can actually be utilized and this condition is more or less perplexing to the average user.

The reason for this discrepancy in the anticipated and actual power secured is due to the fact that insufficient attention is given to the effect of low power factors caused by underloaded induction motors. The purpose of this article is to point a way whereby plants can be operated at greater efficiency by the proper application of data secured with a new type of portable graphic recording Wattmeter illustrated herewith. By the use of this meter, accurate, reliable data can quickly be secured, which will enable the owner of an industion motor plant to materially increase the efficiency without any additional outlay for apparatus.

Without attempting a technical definition of power factor, it can be said that power factor is the ratio of the real power to the apparent power. In every alternating current circuit the voltage and current may or may not be in phase, or step and the difference in phase determines the power factor. In the average industrial installation the current lags behind the voltage and the greater this lag the lower the power factor. The current taken by induction motors, even when fully loaded, is always lagging in respect to the line current so that the power factor of the induction motor is always less than 100 per cent. or "unity." At light loads the amount of lag is greatly increased so that with a large number of lightly loaded motors the power factor of the entire system is materially lowered. This condition not only means greatly reduced capacity of generators, transformers and lines, but also seriously affects the voltage regulation.

Operators of induction motor plants frequently overlook the vital bearing or low power factor on plant output, depending as a rule on the ammeter or voltmeter readings as an indication of the power being generated or delivered. It should be understood that these instruments indicate only the total current and voltage regardless of power factor, and to indicate the real power it is necessary to employ a wattmeter.

It is safe to say that a large percentage of industrial plants employing induction motors are operating under power factor conditions ranging from 60 per cent. to 85 per cent. and the average power factor is seldom higher than 75 per cent. In some installations the power factor is often less than 50 per cent., where there are a large number of lightly loaded motors.

To demonstrate more clearly the effect on power factor caused by lightly loaded motors the accompanying table, Fig. 1, is given showing approximately the efficiencies and power factor of a high grade line of three

phase, 60 cycle, 220 volt motors. Particular attention should be given to the curve, Fig. 2, which graphically indicates the rapid lowering of the power factor of the motor as the load decreases. It will be noted that at full load the power factor is 87 per cent., at half load 77 per cent., and at quarter load it falls to 60 per cent.

It will be seen therefore that if motors are running at less than half-load the effect on the system is bad, and at less than quarter-load is very bad.

One of the most serious effects or low power factor is that it materially reduces the generator output and line capacity. The following example will serve to show this reduction in generator capacity: Assuming a 200 k. w. generator designed to deliver its full 200 k. w. capacity at 100 per cent. p. f. with normal temperature rise and voltage. If this generator is supplying current to induction motors so loaded as to give a 60 per cent. power factor on the system, the generator's real energy output will no longer be 200 k. w., but will be reduced to 120 k. w. Under the conditions cited it should be understood, however, that the ammeter will show the same current with 120 k. w. output at 60 per cent. power factor as it showed with 200 k. w. output at 100 power factor. In short, this 200 k. w. machine will be subjected to the same temperature rise when carrying 120 k. w. at 60 per cent. power factor as it was when carrying 200 k. w. load at 100 per cent. power factor. Assuming the conditions were such that it was necessary to force the generator to deliver 200 k. w. at 60 per cent. power factor by manipulation of the prime mover, the result would be dangerous heating of the coils and in all probability a burn-out or break-down.

Aside from the greatly reduced capacity for real output, low power factor also tends to destroy regulation, so that unless a generator is specially designed to operate at low power factor loads it will be difficult to obtain full voltage. This reduction in voltage necessitates such an increase in the field or

EFFICIENCY AND POWER FACTOR OF 3 PHASE, 220 VOLT, 60 CYCLE MOTORS.

		% EFFICIENCY				% POWER FACTOR AT			
H. P.	R. P. M.	½ Load	¾ Load	Full Load	1¼ Load	½ Load	¾ Load	Full Load	1¼ Load
1	900	75	78	80	80	53	63	70	78
2	1200	82	83	85	85	63	76	83	87
3·5	1200	83	84	85	85	71	82	86	88
5	900	83	84	85	85	63	78	83	87
7·5	900	84	86	86	86	70	79	85	88
10	1200	86	90	90	89	78	86	91	92
15	900	85	87	88	88	77	83	87	89
20	1200	86	88	89	89	77	86	89	91
25	600	85	87	88	89	70	78	84	89
30	900	85	88	89	90	74	86	88	90
40	1200	87	90	91	91	80	86	90	91
50	600	86	88	89	89	79	86	87	88
75	900	88	90	91	91	85	88	91	92
100	900	86	89	90	90	86	88	90	91
150	900	87	90	91	92	87	89	91	92
200	1200	87	91	92	92	88	89	91	92

FIG. 1.

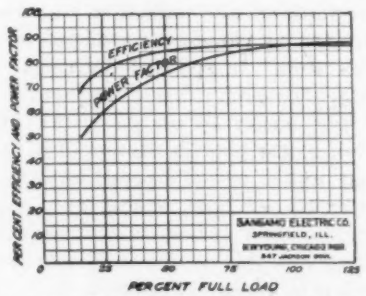


FIG. 2. SHOWING DECREASE IN EFFICIENCY AND POWER FACTOR CAUSED BY UNDERLOADED MOTORS.

excitation current that it is usually beyond the voltage obtainable from the exciter. The most practical method of securing absolute information as to the value, duration and character of motor loads is by means of a portable graphic recording wattmeter.

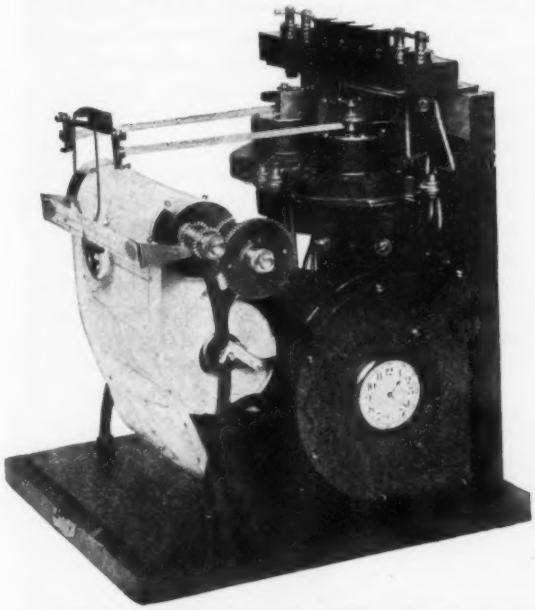


FIG. 3. A PORTABLE GRAPHIC RECORDING WATTMETER.

The first step in securing a high power factor load with induction motors is to so select the sizes that they will operate at full load or even overloads. Induction motors are so constructed that they will stand steady full loads and heavy intermittent overloads. The second step is to ascertain the actual input to the motors as this will give a direct indication as to the amount of load being carried by each motor. With this information the motors or loads can be so distributed as to secure the highest possible load factor on each motor and therefore the entire system, thus materially improving the power factor and efficiency.

A direct method of securing data on motor load factors is to employ a portable graphic recording wattmeter of the type illustrated at Fig. 3. This meter traces a curve, or line on a moving chart calibrated to read in k. w. as shown in Fig. 4. A record taken from a 10 h. p. motor showed the same to be underloaded, the average load being 5 h. p. By referring to the table given above it will be seen that this particular motor was operating at a power factor of 78 per cent. and an efficiency of 86 per cent. By redistributing the load so that the motor carried its full load, the power factor was increased to 91 per cent. and the efficiency to 90 per cent.

The portable graphic recording wattmeter consists of two single phase measuring systems so located in respect to each other that they will measure the true energy in k. w. in either a two phase or three phase system.

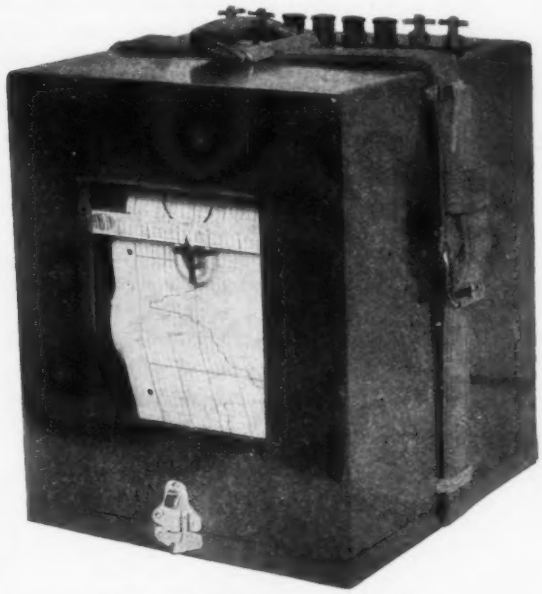


FIG. 4. SHOWING THE MOVING CHART.

The measuring elements actuate a pointer at the end of which is an ink filled pen bearing on a chart driven by clock work. With such a combination a means is afforded of permanently recording the actual input to the motors and the exact time at which each particular value occurred.

Such a record aside from its value of giving energy consumption is also desirable in that it actually records the peaks and valleys of the motor curves from which the machine output at different hours of the day can easily be computed. The proper use of

graphic meters will frequently enable apparatus to increase materially the machine output by checking the low periods of production which may be caused by carelessness, improper operation, or actual willfulness. The method of connecting these meters in service is very simple and a wide range of tests can be made.

The record paper or chart is 6 inches wide and furnished in strips 225 feet in length, thus giving a 40-day chart at the standard speed of 3 inches per hour. This rate of chart feed, 1 inch every 20 minutes, permits a clear, legible and easily interpreted record. The charts are interchangeable for all capacities and are graduated in five main divisions and twenty-five sub-divisions, thus giving clear, well defined calibration marks.

This device is manufactured by the Sangamo Electric Co. H. W. Young, 541 Jackson Boulevard, Chicago, is president.

THE COSMOS ELECTRIC LIGHT.

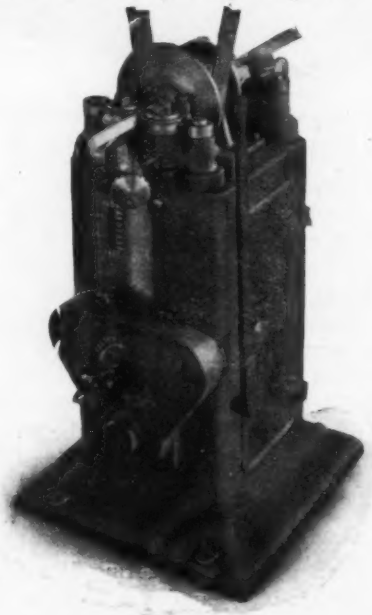
This electric arc lamp, manufactured by the Cosmos Electric Co., 136 Liberty St., New York, embodies important features in electric lighting. The object sought in developing this light has been to make it possible to distinguish colors and to reduce the cost of operation while improving the quality

THE COSMOS ELECTRIC LIGHT.

and distribution of the light. The manufacturers believe that they have accomplished these objects and that they have an electric light which is unexcelled. The lamp is of high efficiency and with a small current consumption produces a pure white and steady light, being, it is claimed, practically identical with that of sunlight. The light from this lamp is distributed where it is most needed. It is of a small size, about 15 inches long, which enables it to be used to good advantage in rooms with low ceilings. A 5 ampere Cosmos lamp giving 1,000 candle power has proved to be a most satisfactory distributor of light within a radius of about 50 feet. The economy of this lamp is shown by the results of the test of a 5 ampere (550 watts) lamp giving about 1,000 candle power. The consumption was .55 watts per actual power and a saving of 75 per cent. of the current was indicated as compared with other methods of lighting. Further information regarding this lamp can be obtained upon application to the manufacturers.

A ROD AND DOWELL MACHINE.

The accompanying illustration shows a new and improved adjustable rod and dowel machine which is especially adapted for the



A ROD AND DOWELL MACHINE.

rapid and satisfactory production of dowels and skewers and the larger rods required

around textile manufacturing plants. With its adjustable cutter head, any desired variation in sizes between 1/4 inch and 2 inches may be readily obtained. Larger sized machines for turning from 2 to 4 inches in diameter and one with a range from 4 to 6 inches in diameter are also furnished on special orders.

Many radical improvements have been embodied in this new tool and the troubles incident to the production of small dowels have been eliminated so that those using it are most cordial in their appreciation of its merits. The makers have adopted a demonstration plan to satisfy a prospective purchaser of the capacity of the machine before it is accepted. It is in use in a number of textile mills to whom reference can be made.

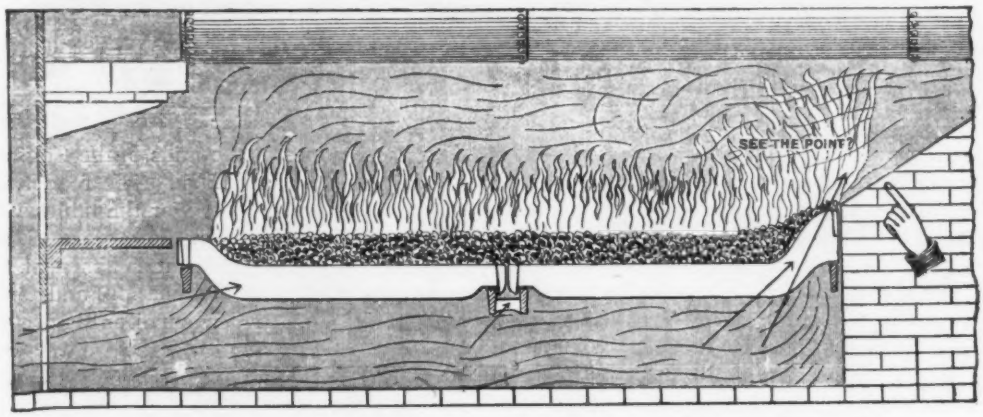
W. S. Hawker Mfg. Co., Dayton, Ohio, build the machine.

MELLOR'S ANTI-SMOKE BARS FOR BOILERS.

Better combustion, a saving of fuel and the prevention of smoke are the objects of the Mellor anti-smoke bars for boilers. These bars are manufactured by the Mellor Furnace Engineering Co., 608 Chestnut St., Philadelphia, Pa. The advantages of these bars are best understood from an explanation of the construction of the Mellor furnace, which is shown in the illustration.

First. The Mellor bars are plain, strong, deep and thin and bent. The bars are depressed from the dead plate bearer, as shown in the illustration. The rear end of the back bars are elevated and form a curved, swan neck section of the grate, which add about twelve inches more to the grate surface. Lugs cast at the center joint of each bar fit into a recess in the middle bearer, which forms part of the equipment, and keeps the bars in position. The air space between each bar may be increased as desired. The bars maintain a vertical position, because of the extra weight below the center of gravity.

Second. In consequence of the design and formation of furnace and bars, additional space is obtained between the burning fuel and boiler or tubes, allowing for the diffusion and the chemical combination of the gases, air and smoke before it leaves the furnace. The elevated rear ends of the back bars are covered with the least proportion of fuel, offering but little obstruction to the inrushing currents of air, which is heated by passing between the hot bars, which are extra deep here. This extra air being admitted at the front bridge-wall, the hottest part of the furnace, produces a brilliant flame that ignites and mixes with any escaping gas and smoke, passing from the furnace which otherwise would escape up the chimney stack.



VERTICAL SECTION OF FURNACE SHOWING MELLOR ANTI-SMOKE BARS.

Third. It is not what is paid for an article, but what the article yields that determines

its value. By lowering the grate it puts the burning fuel in the line of draft through the ash-pit door.

Among the claims for the Mellor bars are the following: The furnace doors are not exposed to so much radiated heat. Eighty-five per cent. of the smoke is prevented. The gases are consumed and utilized for heating purposes. Loss by waste fuel falling into the ash-pit is minimized, and the fouling of heating surfaces and tubes is prevented. As a result the saving in fuel will be 15 to 25 per cent., varying with conditions.

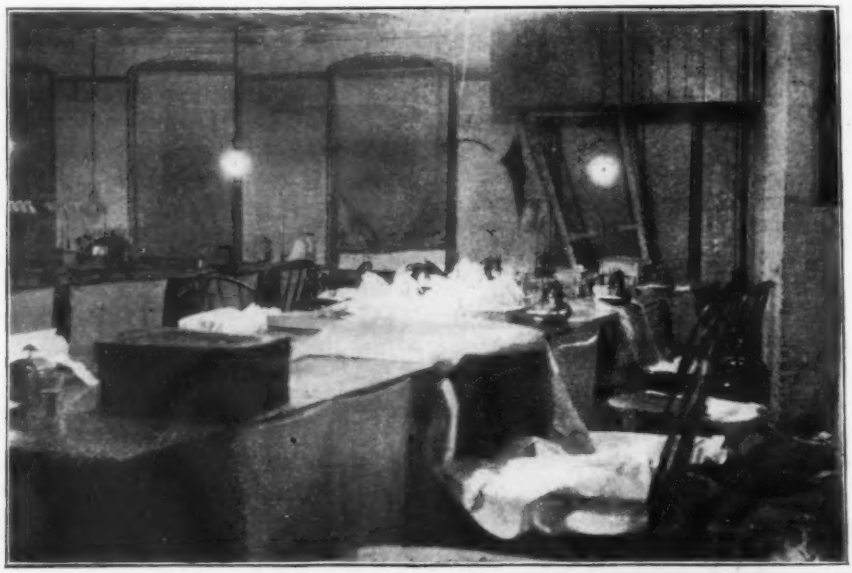
The manufacturers of the Mellor bars are so confident that the claims for them can be demonstrated in practice that they will install a set of anti-smoke bars on twenty-eight days' approval, guaranteeing to eliminate the smoke nuisance, to effect increased evaporation of 15 to 20 per cent., and to effect a minimum saving in fuel of 12 per cent. If the conditions of the guarantee are not fulfilled no payments will be asked.

There are about 21,000 looms in Canada engaged in the manufacture of cotton goods.

AN EFFICIENT GAS LIGHT FOR FACTORIES.

The accompanying illustration shows an installation of the Selas light which has been successfully introduced in many mills and factories by the Selas Co., 90 West St., New York.

The picture shows operating tables with



SERVING MACHINES ILLUMINATED WITH THE SELAS LIGHT.

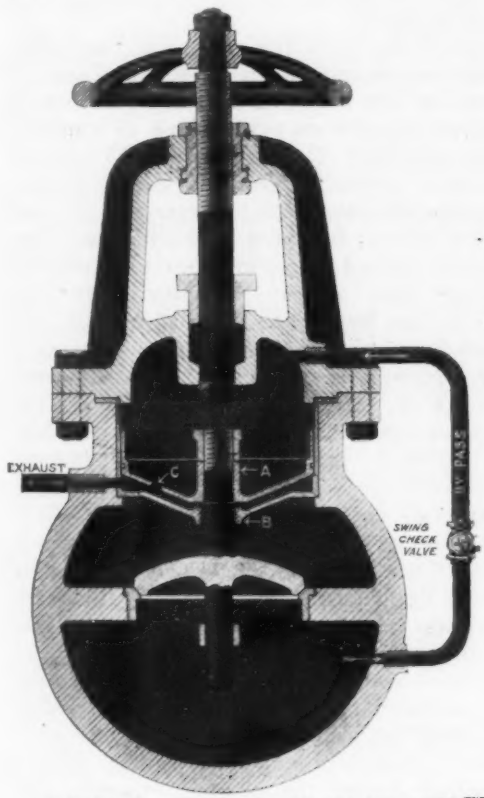
sewing machines at the mills of the Cogswell & Boulter Co. in Newark. The reader will notice the even light all over the tables without sharp shadows and without glare. There are large and very efficient lamps near the ceiling for a general illumination, and at the ends of the tables a few small lights prevent the formation of shadows toward the end. All lamps are arranged to be out of sight of the operators.

The Cogswell & Boulter Co. have operating floors of about 3,500 sq. ft., which are illuminated with Selas light. In addition the stock rooms, cuff rooms and offices are lighted as liberally as the use of the places requires. The monthly gas bill for the illumination of about 60,000 sq. ft. amounted to $16.00 in the month of December. The

Selas Company has had many years of experience in mill lighting and is always ready to give information and full estimates of cost of installations and operation of a light plant.

THE GOLDEN CUSHIONED NON-RETURN VALVE.

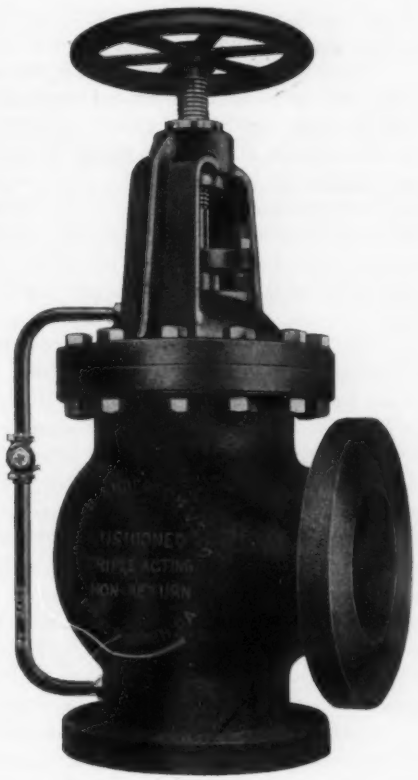
The illustrations show the exterior and section of the Golden cushioned triple-acting non-return valve, manufactured by the Golden-Anderson Valve Specialty Co., Fulton Bldg., Pittsburgh, Pa. The modern power stations and large manufacturing plants with their batteries of boilers and having



A SECTIONAL VIEW OF THE GOLDEN CUSHIONED NON-RETURN VALVES.

many branched pipes, has necessitated the use of a valve to operate instantly and automatically, acting as a safeguard in emergencies, in case of the bursting of pipes, fittings, valves or other accidents, which would instantly flood the engine and boiler rooms with steam, making it impossible to shut off the regular valves, thus causing untold loss and injury or death to the attendants. The Golden cushioned valve has been designed to avert this danger.

The Corliss dash-pot method of cushion-



THE TRIPLE ACTING NON-RETURN VALVE.

ing these valves, occupying the full area of the upper portion of the body, insures a positive cushion in the opening and closing of the valves and perfect alignment with the seat at all times, regardless of position. The non-return feature protects the boilers in case of accident, such as the bursting of a tube, and will act as a safety stop to prevent steam from being turned into a cold boiler, which means a safeguard for men when working inside. The emergency feature

protects life and property in case a break or rupture occurs in the main steam line or branches. The valves will automatically cut off the flow of steam from the boilers until the break is repaired.

The sectional view shows the by-pass which admits full boiler pressure above and underneath the inside dash-pot at "c," therefore it is balanced, consequently all packing and tight fittings which cause sticking and corrosion are eliminated. The steam connection from the main steam line to the automatic pilot valve holds it closed because of the larger area above its valve. There is also a steam pipe connection made between the two dash-pots leading to the pilot valve. In case a rupture occurs in the steam lines, the pressure is removed from the top of the pilot valve, allowing it to open instantly, exhausting the pressure from between the two dash-pots.

The full boiler pressure always being above dash-pot "A," the valve will close, at the same time it is cushioned in the operation. The automatic pilot valve is simple in construction and positive in operation. It can be located at any desirable place, thus having control from different points.

The Golden cushioned triple acting valves can be tested at any time and as often as desired without any interference whatever in the operation of the plant. Convincing evidence of the merits of the Golden-Anderson valve is supplied by the United States Steel Company, which recently placed a repeat order for three hundred valves, making a total of six hundred valves used by this company alone for the protection of their power station.

The exports of Indian silk manufacturers in 1909 and 1910 amounted to only $272,500. The imports of silk goods into India during the years 1909 and 1910 amounted to $7,556,500.

The total value of exported cotton goods of domestic manufacture for the year ending June, 1910, amounted to $33,398,672, whereas the imports of cotton manufactures into the United States during the same period amounted to $66,473,143 in value.

WORSTED TOP FUTURES.

Only those in close touch with the markets in France and Belgium can have any conception of the gigantic business that is put through almost weekly. Thousands of packs of tops are sold and bought which never go beyond mere paper, the transactions being similar to, if not identical with, those of futures on the Cotton Exchange at Liverpool. For instance, at Antwerp alone on the 31st of last month, several firms were committed on a signed contract to deliver over 5 million kilos. of 60's River Plate wool tops, but the greater portion of these contracts will have to be settled without the delivery of a single pound.

It is exactly at this point that the difference comes in between the forward sales of tops on the Bradford Exchange, and those paper transactions put through at Roubaix, Antwerp and Havre. At the Yorkshire premier center all forward sales are only completed when actual delivery of the last pack of tops has been made, it being very seldom indeed that either buyer or seller is called upon to pay the difference. The writer has known the trade all his life, and only in times of "slump" have differences been paid and received; but in nine cases out of ten the actual weight of material contracted for is delivered. No man can take exception to this kind of business, but we unhesitatingly say that when "futures" are expressly used for the purpose of "bulling" or "bearing" the market, then unreasonable use is being made of a system which was never designed for that purpose. Forward business is right enough; and if men would only use the privilege in a national and sober way, we should be spared seeing prices so manipulated as to cause loss, which under ordinary circumstances would never have resulted. A feature of the Continental "terme" markets during the past few months has been the heavy sales for the express purpose of depressing wool values at Australian selling centers. "Bears" began operations as early as last July, when they agreed to accept responsibility for delivering merino tops in January at about 40 to 45 centimes lower than the price ruling for delivery this month. —The Textile Mercury.

Personals.

Will Nelson, overseer of weaving at the Bernon Mill, Georgiaville, R. I., has resigned to accept a position as designer at the New York Mills, New York Mills, N. Y.

P. F. Whalen has accepted the position as designer for Sidney Blumenthal & Co., Shelton, Conn. He was formerly employed at the Namquit Mill, Bristol, R. I.

Peter Costello, Jr., has been appointed overseer of finishing at the Akers & Taylor Mfg. Co., Charlton City, Mass. He comes from Ludlow, Vt.

Frank Perkins, overseer of finishing at the Mohegan Mill, Wanskuck Co., Mohegan, R. I., has severed his connection with that company.

P. F. Whalen has accepted the position as designer for the Sidney Blumenthal & Co.'s Mill, Shelton, Conn. He was formerly employed at the Namquit Mill, Bristol, R. I.

Robert W. Ringland has accepted the position as overseer of finishing at the Mohegan Mill, Wanskuck Co., Mohegan, R. I. He comes from Penacook, N. H.

Thomas Moore, overseer of carding at the Kennebec Mills, Fairfield, Me., has severed his connection with that company.

Henry G. Lord of the Lord & Nagle Co., publishers of the Textile World Record, was elected president of the Federation of The Trade Press Associations of the United States at the annual convention in New York on January 20th. The Federation is composed of the local press associations in all parts of the country and includes the principal trade and technical papers in all lines of industry. Mr. Lord has previously filled the positions of secretary, treasurer and vice-president.

Byron F. Card, formerly one of the best known mill men of New Bedford, Mass., and who has been employed as agent of the Tallassee Falls Mfg. Co., Tallassee, Ala., is suffering from injuries inflicted by one of the overseers in his employ.

A. W. Slocum, superintendent of the Middlesex Co., Lowell, Mass., has been appointed agent of the Faulkner Mfg. Co., North Billerica, Mass., to succeed W. A. Evans.

Walter Henderson has been appointed overseer of carding at the Ipswich Mill, Ipswich, Mass., succeeding Thomas Curtis.

Wm. Hinds, overseer of dyeing at the Rosemont Dyeing Co., Woonsocket, R. I., has severed his connection with that company.

Elmer E. Lunt, superintendent of the Harrison Yarn Dyeing Co., Pawtucket, R. I., has resigned his position with that firm. Chas. W. Thomas is now acting as superintendent.

W. H. Parr has been appointed overseer of dyeing at the Hoosac Worsted Mill, North Adams, Mass. He comes from the Premier Worsted Mill, Wickford, R. I.

J. F. Truesdell has accepted the position as overseer of spinning at the Eagle Lake Mill, Jefferson Mfg. Co., Jefferson, Mass. He was formerly employed at the Geneva Mill, Providence, R. I.

John Walton, Sr., has been appointed superintendent of the Littleton Hosiery Mill, Littleton, N. C. This plant was recently taken over by the Enfield Hosiery Mill, Enfield, N. C.

T. F. Trimble, who recently resigned as superintendent of the Rensselaer & Valatie Mills, Rensselaer, N. Y., has been appointed manager of the Lion Mfg. Co., St. Johnsville, N. Y.

H. R. Roosevelt has been appointed master mechanic and engineer at the Bay State Thread Works, Springfield, Mass. He comes from Williamsburg, Mass.

James Booth has accepted the position as overseer of dyeing at the Brown Mill, Dover, Me. He comes from Boonton, N. J., and succeeds J. H. Parker.

Chas. H. Crompton, for more than 20 years overseer of finishing at the Manville Co., Manville, R. I., has severed his connection with that company. In behalf of the employes, John W. Hall presented Mr. Crompton with a solitaire diamond ring.

John C. Wilkinson has accepted the position as boss dyer at the Gass Dyeing & Finishing Co., Philadelphia, Pa. He was formerly boss dyer at the Valkone Dyeing & Finishing Works, same city.

C. E. Foster, assistant superintendent at the Champlain Silk Mills, Whitehall, N. Y., has been promoted to the position of superintendent of the entire factory.

J. H. Parker, overseer of dyeing at the Brown Mill, Dover, Me., has severed his connection with that company.

Wm. Dow has been appointed overseer of dyeing at the Old Town Woolen Co., Old Town, Me. He was formerly engaged at the Morrison Woolen Co., Dexter, Me.

Peter McFarland has accepted the position as overseer of bleaching and mercerizing at the Nyanza Mill, Woonsocket, R. I. He was formerly engaged in a similar position with the Home Bleach & Dye Works, Pawtucket, R. I.

James Magner, overseer of dyeing at the Assabet Mills, Maynard, Mass., has severed his connection with that company.

John Perreault, employed at the Windsor Print Works, North Adams, Mass., was seriously injured while mixing chemicals at the works, his hands being severely injured.

Willard Handel has accepted the position as overseer of weaving at the Ashaway Woolen Co.,

Ashaway, R. I. He was formerly employed at the Westerly Woolen Co., Westerly, R. I.

Roy Brier, superintendent of the Ashaway Woolen Co., Ashaway, R. I., has severed his connection with that company. He is succeeded by Lloyd Briggs, who was formerly in charge of the mill.

Thomas L. Cheney, who has been connected with Cheney Bros., South Manchester, Conn., as superintendent of the spinning department since 1901, is to take a position in their New York office to succeed his brother, the late Knight Dexter Cheney, Jr.

Peter Stitt, overseer of dyeing at the Broad Brook Co., Broad Brook, Conn., has severed his connection with that company to accept a similar position with the Assabet Mill, Maynard, Mass.

Wm. Henderson has accepted the position as master mechanic at Elm Mill, Tilton, N. H. He was formerly employed at Lebanon, N. H.

Harold Richmond has accepted a position as designer for the Crompton & Knowles Co., Providence, R. I. He was formerly employed at the Eclipse Mill, North Adams, Mass.

John P. Leary has taken charge of the office work for the Woodside Woolen Co., Northboro, Mass. He formerly held a similar position with the Pine Tree Worsted Co., Medway, Mass.

Percy E. Gray has accepted the position as overseer of night spinning at Strong, Hewat & Co., Briggsville, North Adams, Mass. He comes from Saxonville, Mass.

M. T. Murphy, superintendent of Cooper, Wells & Co., St. Joseph, Mich., has resigned to accept a similar position with the Grand Rapids Hosiery Co., Grand Rapids, Mich. Mr. Murphy has been in the employ of Cooper, Wells & Co. for ten years.

Wm. Bromhead has been appointed instructor in mill calculations, weaving and fabric constructions for the Bradford-Durfee Textile School, Fall River, Mass.

Clarence N. Childs, agent of the Hamilton Mfg. Co., Lowell, Mass., has resigned his position with that company. He has held the position for the past seven years. Albert E. Milliken of Fall River is his successor.

Richard Bottomley has accepted the position as overseer of carding at the Esmond Mill, Esmond, R. I., succeeding A. Halliwell.

Carl H. France, overseer of dyeing at the Salt's Textile Mfg. Co., Norwalk, Conn., has severed his connection with that company. He is succeeded by David A. Stewart, who was formerly engaged at the Cocheco Woolen Mfg. Co., East Rochester, N. H.

Wm. Hinds has accepted the position as overseer of dyeing at the Premier Worsted Co., Wickford, R. I. He was formerly employed at the Rosemont Dyeing Co., Woonsocket, R. I.

Jno. Fisher has accepted the position as overseer of dyeing at the Webster Woolen Co., Sabattus, Me. He succeeds Alex. Melrose. Mr. Fisher was formerly employed at North Vassalboro, Me.

Paul Meissner, superintendent of the No. 2 Mill of Sidney Blumenthal & Co., Shelton, Conn., has severed his connection with that company. He is succeeded by Wm. P. Nichols, formerly superintendent of the Mohegan Mill of the Wanskuck Co., Mohegan, R. I.

P. L. Sullivan has accepted the position as overseer of dyeing at the Springdale Finishing Co., Canton, Mass. He comes from Bondsville, Mass.

Robert L. Quinley, overseer of carding at the Johnson Woolen Co., Stafford Springs, Conn., has severed his connection with that company.

John Roebuck, superintendent of Robert Megowan & Sons' Mill, Frankford, Philadelphia, has resigned.

Vernon L. Peace, overseer of weaving at the Globe Woolen Co., Utica, N. Y., has resigned to accept a similar position with the Burlington Mill, Winooski, Vt.

J. H. Parker, overseer of dyeing at the Brown Mill, Dover, Me., has resigned to accept a position with the Franklin Felt Co., Franklin, Mass.

Nelson Minor, overseer of spinning for A. D. Gleason, Gleasondale, Mass., has resigned to accept a position with the Elm Mills, Tilton, N. H.

Geo. N. Smith, overseer of carding and spinning at the Church Woolen Mill, Wegatchie, N. Y., has severed his connection with that company.

Geo. G. Boone has resigned as overseer of weaving at the Dilling Mills, King's Mountain, N. C., to accept a similar position with the Osage Mfg. Co., Bessemer City, N. C.

Chas. R. Harmon has resigned as overseer of carding at the Capital City Mills, Columbia, S. C., to accept a similar position with the Cannon Mills, Kannapolis, N. C.

F. L. Allen, superintendent of the Textile Mills Corporation, Wesson, Miss., has resigned to accept a similar position with the Maginnis Mills, New Orleans, La.

B. L. Adams, overseer of carding at the Pell City Mfg. Co., Pell City, Ala., has resigned to accept a position with the Carolina Mills, Greenville, S. C.

J. J. Bates has accepted the position as overseer of spinning at the Buffalo Cotton Mills, Buffalo, S. C., having resigned a similar position with the Washington Mills, Fries, Va.

J. J. Rouch has resigned as assistant superintendent of the Victoria Mills, Rock Hill, S. C., to accept the superintendency of the Cohannet Mills (the recently reorganized Fingerville Mfg. Co.) at Fingerville, S. C.

W. S. Dean, who graduated in the textile department of the A. & M. College, Raleigh, N. C., in

1909, has been appointed instructor in carding and spinning at the Mississippi Textile School, Starkville, Miss.

Wm. Miller, overseer of carding at the York Cotton Mills, Yorkville, S. C., has resigned.

G. W. Chaney, second hand of weaving at the Woodside Mill, Greenville, S. C., has resigned to become overseer of the weaving, slashing, drawing-in and cloth room at the Maplecroft Mills, Liberty, S. C.

Edw. Stratton, overseer of carding at the Bennett Mill, N. E. Cotton Yarn Co., New Bedford, Mass., has been promoted to the position of assistant superintendent to succeed John J. McMullen.

James L. Herring, overseer of spinning at the Bennett Mill, N. E. Cotton Yarn Co., New Bedford, Mass., has been promoted to the position of superintendent to succeed Wm. L. Jenkins.

W. Fred Allen, president of the Mohawk Valley Cap Factory, Utica, N. Y., died of acute Bright's disease at his home in Utica recently.

John J. Shea, overseer of carding at the Jefferson Mfg. Co., Jefferson, Mass., has resigned to accept a similar position with the A. H. & C. B. Alling Co., Derby, Conn.

Wm. L. Jenkins, superintendent of the Bennett Mill, N. E. Cotton Yarn Co., New Bedford, Mass., has resigned to accept a similar position with the American Thread Company's mill at Willimantic, Conn.

John J. McMullen, assistant superintendent at the Bennett Mill, New England Cotton Yarn Co., New Bedford. Mass., has severed his connection with that company to accept a position with the Grant Yarn Co., Fitchburg, Mass.

Daniel J. Sheehan, overseer of carding at the A. H. & C. B. Alling Co., Derby, Conn., has resigned to accept a similar position with the Jefferson Mfg. Co., Jefferson, Mass., succeeding Jno. J. Shea.

Philip G. Brug has accepted the position as assistant superintendent of the Wuskanut Mill, Farnumsville, Mass. He was formerly designer at the Earnsdale Worsted Co., Clinton, Mass.

Robert C. McFadden has been appointed superintendent of the Samoset Co., Valley Falls, R. I., succeeding Jos. Bailey.

H. H. Kincaid, superintendent of the Oxford Linen Mill, North Oxford, Mass., has severed his connection with that company.

Frank Baldwin, superintendent of the Pocasset Worsted Mill, Thornton, R. I., is to sever his connection with that company to start in business for himself. Mr. Baldwin has been employed by this company since its establishment, thirteen years ago.

A. I. Lamire has been appointed overseer of carding at the Central Woolen Co., Stafford Springs, Conn. He comes from Franklin Falls, N. H., and succeeds Robert Quinley.

John P. Wood, of William Wood & Co., operating the Pequea Mills of Philadelphia, has accepted the nomination for the presidency of the National Association of Wool Manufacturers, succeeding William Whitman, who has expressed his desire to retire from the presidency. Mr. Wood's election is of course assured and will be regarded as a wise choice. The annual meeting of the Association will be held this year at the new Willard Hotel in Washington on February 1st and a number of prominent speakers of national reputation have accepted invitations to be present, including Vice-President Sherman, Senator Warren, Chairman Emery of the Tariff Board, and others.

William Miller, formerly of the York Cotton Mills, Yorkville, S. C., has been appointed boss carder and spinner at the Marlboro Mill No. 4, McColl, S. C.

Henry Finke, treasurer and superintendent of the Bakhaus & Kuenzel Co., New Bremen, O., died at his home in that town Sunday, Jan. 15, 1911. He had been connected with this firm for a number of years and was highly respected by those who knew him.

J. C. McCombs, overseer of spinning at the Pomona Mills, Greensboro, N. C., has resigned to become overseer of carding and spinning at the new Inverness Mills, Winston-Salem, N. C.

Gus Winecoff has accepted a position as overseer of dyeing at the Cliffside Mills, Cliffside, N. C. He comes from Concord, N .C.

T. L. Clark, formerly of Denison, Tex., but recently superintendent of the Albany Cotton Mills, Albany, Ga., has resigned.

J. L. Jarvis, overseer of spinning at the Durham Hosiery Mills, Durham, N. C., has resigned to accept a similar position with one of the mills at Cedartown, Ga.

F. G. Parker has accepted a position as overseer of spinning at the Lumberton Cotton Mills, Lumberton, N. C.

J. Wallace Brown, overseer of carding and spinning nights at the Harris Mfg. Co., Rock Hill, S. C., has resigned to accept a position with the Manchester Mills of the same place.

J. H. Jenkins has been appointed overseer of carding at the Gray Mill, Woodruff, S. C. He comes from the Woodruff Cotton Mill, Woodruff, S. C.

W. P. Hornbuckle has accepted the position as overseer of carding and spinning at the Minneola Mills, Gibsonville, N. C.

George Simpson, superintendent of the Hopedale Mills, Burlington, N. C., has resigned to engage in mercantile business in that town.

Ralph C. Perkins has accepted the position as overseer of weaving at the Meredith Linen Mill, Meredith, N. H.

Chas. E. Johnson, overseer of carding at the Tilton Mill, Tilton, N. H., has severed his connection with that company.

Chas. D. McEvoy has been appointed superintendent of the Mogehan Mill, Wanskuck Co. Mohegan, R. I., succeeding W. P. Nichols.

C. H. Philbrick, overseer of carding at the Merrimac Woolen Co., Lowell, Mass., has severed his connection with that company.

Geo. E. Spofford, superintendent of the Blackstone Mfg. Co., Blackstone, Mass., has tendered his resignation to take effect as soon as his successor is appointed. Mr. Spofford resigns to accept a position as agent of the Newmarket Mfg. Co., Newmarket, N. H.

J. M. Gamewell, superintendent of the Arkwright Mill, Spartanburg, S. C., has severed his connection with that company to accept a similar position with the Courtenay Mfg. Co., Newry, S. C.

Vernon L. Peace, overseer of weaving at the Globe Woolen Co., Utica, N. Y., on retiring from his position which he has held for a number of years, was presented with a twenty-dollar gold piece and several boxes of cigars by the help in the weaving department who expressed their regret at his leaving.

Robert Quinley, formerly overseer of carding at the Central Mill, Stafford Springs, Conn., has accepted a similar position with the new City Mill, Garland Woolen Co., Staffordville, Conn.

James Parkin has accepted the position as designer at the Hewson Woolen Mills, Ltd., Amherst, N. S. He comes from Harrisville, R. I.

Eugene R. Tilton has accepted the position as overseer of knitting at the Adrian Knitting Co., Adrian, Mich. He comes from Utica, N. Y.

Fred Goebel has accepted the position as overseer of finishing at the Appalachian Mills, Knoxville, Tenn. He was formerly employed at the Friedman-Blau-Farber Co., Cleveland, Ohio.

Thomas McGuire has accepted the position as overseer of knitting at the McLaren Knitting Co., West Sand Lake, N. Y. He was formerly employed at Cleveland, O.

E. S. Cornell has accepted a position as superintendent of the Northland Knitting Co., Minneapolis, Minn. He comes from Cleveland, Ohio.

J. C. Bachelder, overseer of knitting at the Delaware Hosiery Mfg. Co., Wilmington, Del., has resigned to accept a similar position with the Hetrick Hosiery Mill, Walhalla, S. C.

Daniel E. Starky, second hand in the knitting department at the Lawrence Mfg. Co., Lowell, Mass., has been engaged as overseer of knitting at the Delaware Hosiery Mfg. Co., Wilmington, Del.

Geo. Morgan has accepted the position as overseer of knitting for John K. Stewart & Sons, Amsterdam, N. Y. He was formerly employed at the Athens Knitting Co., Athens, N. Y.

Frank Payton, superintendent of the Vermont Hosiery & Machinery Co., Bennington, Vt., has severed his connection with that company. He is succeeded by Stephen L. Shippey.

DEATHS.

Gideon F. Holmes, treasurer and general manager of the Plymouth Cordage Co., died suddenly at his home in Plymouth, Mass., with an attack of heart failure. He was 67 years of age, and had been connected with the cordage company for the past 52 years, starting in as office boy and working up to the position of treasurer and general manager. He was a descendant of the Mayflower stock. He is survived by one son and a daughter.

Chas. H. Childs, prominent in the textile industry of New England and the South, died at his home in Providence, R. I., at the age of 70 years. His death followed a long illness resulting from an attack of pneumonia. At the time of his death he was treasurer of the Standard Mill Supply Co., Providence, R. I., a director of the Warren Mfg. Co., Warren, R. I., the Textile Mill Supply Co., and the Charlotte Mill Supply Co., both of Charlotte, N. C. He was also a director of the Home Market Club of Boston. Mr. Childs had never held a political office, but was much interested in politics. He had attended the last four Republican national conventions as a delegate. He is survived by two daughters.

Henry Clinton Hubbard, treasurer of the American Narrow Fabric Co., Woonsocket, R. I., died at his home in that city. He was born in Woonsocket in 1859 and received his education from the public schools. He was highly spoken of among his business acquaintances and associates.

Col. Seth M. Richards, who was president of the Sugar River Mills, Dexter Richards & Co., Newport, N. H., died at his home at the age of 60 years. He had been a manufacturer of woolen goods for several years, and his mill was run very successfully on the class of goods manufactured.

J. E. Spaulding, president of the New England Knitting Co., Inc., Winsted, Conn., died at his home from concussion of the brain sustained in a fall at his home, a few days ago. He is survived by a widow and one daughter.

Madison Vedder, a manufacturer of knit goods and at one time president of the Waiontha Knitting Co., died at his home in Herkimer, N. Y., at the age of 80 years. He is survived by a widow.

Allen Ruffin, president of the Eno Cotton Mills, Hillsboro, N. C., died in Philadelphia at the age of 52 years. He is survived by a widow and one son.

Thomas O'Brien, who has been proprietor of the Leonard House, Westerly, R. I., for a number of years, and previous to that time superintendent of the Carmichael Mill of Westerly, died at his home on Main St., at the age of 60 years. He was highly respected by all who knew him. His remains were taken to Pascoag for burial, his wife having died about five weeks previous to his death.

Mill News

Those interested in receiving early and more complete investigated information of projected new mills, enlargements, improvements, fires, facts and gossip of the trade are referred to the TEXTILE ADVANCE NEWS, issued weekly by the publishers of the TEXTILE WORLD RECORD, at $15.00 per year.

COTTON.

New Mills.

*Georgia, La Grange. It has been finally decided to organize the Dunson Mills with capital stock of $500,000 and the following officers will be elected: J. E. Dunson, president; J. M. Barnard, vice-president; T. J. Thornton, treasurer and general manager, and W. S. Dunson, superintendent. Plans and specifications for buildings are being prepared by J. E. Sirrine and building contracts will be awarded shortly. The machinery equipment has been arranged for.

*Georgia, Monticello. As suggested in the report of the incorporation of the Castle Cotton Mills, the company has succeeded the Jasper Cotton Mills project. A plant of 50,000 producing spindles, 500 twister spindles and 1,200 looms will be established for making fine converters' goods. An architect and engineer has been engaged and it is stated that all contracts are about to be closed. Electric power will be obtained from the transmission lines of the Central of Georgia Power Co. of Macon. Wm. T. Lang of West Point will be president and general manager and will give his entire attention to the new company.

*Massachusetts, Fall River. D. H. Hatheway, treasurer of the Wilcox & Hatheway Co., has been elected treasurer of the new Pilgrim Mills. The other officers as reported previously are Wm. C. Hawes, president, and Eben C. Willey, agent. The directors include the officers and Albert A. Jenks, James C. Potter, Leon W. Campbell, all machinery men, and Eric W. Borden. An office will be established in the Globe Bldg. and arrangements made as early as possible for beginning construction work on buildings.

*Massachusetts, New Bedford. The first of the machinery equipment of the new Sharp Mfg. Co. will be installed next week, this equipment, which consists of pickers, having arrived. The interior work on the buildings is practically completed and manufacturing will probably be started in April. Work was started on the plant of the Sharp Mfg. Co. last July and in spite of difficulties very good progress has been made. The concern will employ about 700 hands, operating 80,000 ring spindles on fine Peeler, Egyptian and Sea Island yarn. The capital stock is $1,500,000. Joseph T. Kenny is president; Arthur R. Sharp, treasurer, and Robt. Schofield, superintendent.

*New Jersey, Bridgeton. Machinery is being placed on the floor of the new mill built here for the Geo. W. Preston Mfg. Co. The building is not entirely finished and operations will be held up for a few weeks.

*North Carolina, Lumberton. The buildings of the new Jennings Cotton Mills are completed and machinery equipment, including 8,000 spindles, is being installed and it is expected will be ready to manufacture yarns by the middle of March. The main building is 131 by 464 ft., with separate engine and boiler house, 80 by 90 ft. Carded and combed American and Egyptian yarns on cones and tubes will be made. H. B. Jennings, treasurer and general manager of the Dresden Cotton Mills and the Lumberton Cotton Mills of this place is president and treasurer of the new company.

*North Carolina, Meadow Summit. A charter has been granted the Fine Arts Gingham Co. with capital stock of $300,000. As noted previously, F. C. Newlin of Fayetteville and Spray, heads the enterprise. Plans and specifications will be completed soon and call for a main building, 500 by 110 ft., 1 story high, with saw-tooth roof, to be equipped with 10,000 spindles and 400 looms, to be driven by electric power, on high grade ginghams.

*North Carolina, Salisbury. The Hambley Mfg. Co., incorporated several months ago with capital stock of $125,000, plans to begin the construction of a plant shortly. Manufacturing will begin with 50 broad looms operated by electric power on mercerized damasks. C. C. Adams is president; D. L. Arey, vice-president, and G. F. Hambley, secretary and treasurer.

*South Carolina, Greenville. A 300-acre site has been purchased by J. I. Westervelt for the new Westervelt Mills and construction contract will be awarded soon. Lockwood, Greene & Co., Boston, are the architects and engineers and have prepared plans for a spinning mill, 2 stories high, 130 by 300 ft., and a weave shed, 1 story high, 230 by 300 ft. In addition a power house, warehouse and about 75 operatives' cottages will be built. The equipment will include 50,000 spindles and 1,200 looms to be driven by electric power. Machinery contracts have been awarded.

*South Carolina, Greenville. The new fine cotton goods mill headed by Captain Ellison A. Smyth and J. Adger Smyth, Jr., will be organized as the Dunean Cotton Mills. The company will be capitalized at $1,000,000 and will have equipment consisting of 50,000 spindles and about 1,500 looms. Most of the capital is being furnished by New England, New York and Charleston investors represented by the Messrs. Smyth. Greenville investors are asked to furnish $100,000. The Board of Trade has indorsed the project and appointed a committee to solicit the $100,000 local subscription. The success of the enterprise is considered assured.

*South Carolina, Newberry. Certificate of incorporation has been filed by the Oakland Cotton

Mills. The capital stock is $400,000. W. S. Mayes, John W. Kibler, W. H. Hunt, J. D. Wheeler, J. N. Martin, C. D. Weeks, W. A. McSwain and J. B. Hunter are the incorporators. Contract for the construction to buildings to be equipped with 20,000 spindles and 600 looms has been awarded as noted previously.

*Vermont, Brattleboro. Geo. L. Dunham of Brattleboro, has been elected president of the new Fort Dummer Mills Co.; M. G. Chace, Providence, vice-president; Edward G. Chace, Providence, treasurer and manager. The plans of the architects have been approved and calls for bids on construction work have been authorized. Ten per cent of the capital stock is to be paid February 1.

Enlargements and Improvements.

*Alabama, Tallassee. The new looms recently added by the Tallassee Falls Mfg. Co. are in operation. This enlargement included 500 new looms and improvements in the power plant.

Georgia, Chattahoochee. New combers have been received by the Whitter Mills Co. and are being installed.

Massachusetts, Fall River. An order for 320 Northrop looms has been placed by the Fall River Iron Works Co. Part of this number will be used to replace old equipment and part as an addition.

Massachusetts, Lowell. A permit has been granted the Appleton Co. to erect a large storage building and a stable. The building will be 101 by 30 ft., 2 stories high, and will cost in the neighborhood of $7,500.

Massachusetts, New Bedford. An addition is to be built by the Wamsutta Mills to the building on Purchase St., now used as a cotton shed. The addition will be 4 stories high, 61 by 12 ft.

*Mississippi, Meridian. The yarn spinning department of the Priscilla Mills has been completed. Buildings costing $17,000 have been erected and 5,000 spindles installed.

*New Hampshire, Claremont. Mill No. 3 of the Monadnock Mills and the bleachery are now being operated by electric power and the electrification of the other mills will follow as rapidly as possible. About $100,000 is being expended and the change has involved the construction of a new concrete power house, 60 by 80 ft., in which have been placed two generators of 425 h. p. each. It is planed to run this by water power as far as possible and to this end the company has built a steel flume from its upper dam, 484 ft. long and 10 ft. in diameter. To supplement water power in times of low water a steam turbine has been placed in the power house. In addition to these improvements to the power department a new weave shed has recently been constructed, 67 by 100 ft., 2 stories high, and equipment of 65 looms installed.

*New Hampshire, Somersworth. New automatic looms are being installed in No. 1 Mill of the Great Falls Mfg. Co., replacing old equipment.

New Hampshire, Suncook. New machinery recently installed in the Suncook Mills is now in operation.

*New York, Cohoes. New machinery equipment has been ordered for the increase in the yarn plant of the Fuld & Hatch Knitting Co.

New York, Cohoes. A new company is to be formed under the laws of Massachusetts to be known as the Harmony Mills with capital stock of $3,000,000, classified as $1,500,000 7 per cent. preferred and $1,500,000 common, to succeed the present Harmony Mills, which will be liquidated. Geo. A. Draper will be president: Albert Greene Duncan, at present treasurer, will continue in that capacity. The directors include Eben S. Draper, Frank J. Hale, Henry Hornblower, Robt. F. Herrick, Thos. W. Slocum, Lorenzo Semple and R. Paul Snelling. Albert Greene Duncan stated to the Advance News that provision has been made for the installation of nearly $2,000,000 worth of new machinery, all of which has been contracted for. The change will be made as soon as possible and the new machinery will be installed just as soon as it can be done. It is understood that the present weaving equipment will be replaced by about 5,000 Northrop looms.

New York, Lockport. A new mill is to be built by the Lockport Textile Co. which will more than double the present capacity. Cotton and linen towels are manufactured on present equipment of 60 looms.

North Carolina, Burlington. Electrical warp stop motions are being placed on all the looms of the E. M. Holt Plaid Mills. 140 narrow looms are operated on fancy ginghams.

North Carolina, Laurel Hill. A new boiler is being installed in the power department of the Ida Yarn Mill.

*North Carolina, Lowell. The Lowell Cotton Mills are giving consideration to the proposed addition mentioned last November at the time the capital was increased from $100,000 to $450,000. Ten thousand spindles and 300 looms will be added to the present equipment and it will be necessary to erect a new mill building. At present yarns only are manufactured, 9,000 spindles being operated in No. 1 Mill and 6,000 spindles in No. 2 Mill.

*North Carolina, Newton. The previously noted weaving department of the Newton Cotton Mills will be equipped about March 1. The equipment will consist of 60 looms to weave part of their output of yarns.

North Carolina, Rockingham. The Great Falls Mfg. Co. is making improvements, including the installation of a new engine.

*North Carolina, Salisbury. Changes proposed by the Vance Cotton Mills comprise the building of a 10,000-spindle mill for the manufacture of fine combed yarns. Necessary steps to increase the capital stock to $300,000 have been taken and they hope to be able to begin work on building and equipping the new mill some time in the spring. E. B. Neave is secretary, treasurer and manager. While the project is contingent on sufficient capital being subscribed, it is unlikely that any difficulty will be experienced along this line.

North Carolina, Swepsonville. An order has been placed by the Virginia Cotton Mills for a dyeing machine.

Pennsylvania, Glen Riddle. The Andrew P. Welsh Co., since the death of Mr. Welsh has been reorganized with the following officers: M. Rouse, pres.; T. Frank Lee, vice-pres.; W. J. Lafferty, treasurer and general manager, and E. J. Mingsy, sec. They are manufacturers of Turkish towels with 50 broad looms. A number of new improvements have been made to the plant. The officers on the third floor of the building have been enlarged and newly equipped and 50 more new looms will be added which will double the capacity.

*Rhode Island, Warren. The Cutler Mfg. Co. will install an additional quantity of new machinery, putting in more Saco-Pettee cards, drawers and slubbers and Whitin spinning frames and twisters. There is no truth in the current report that the company will erect a new building. The Cutler Mfg. Co. is controlled by John H. Estes and Rufus P. Walker.

*South Carolina, Camden. Extensive improvements which have been under way for some time at the Hermitage Cotton Mills are nearly completed and operations will be resumed in a few weeks. An additional story has been built on the mill and equipped with picking and carding machinery. All the equipment has been overhauled and electric lighting installed.

*South Carolina, Chester. When changes and improvements are fully completed the Springstein Mills will have total equipment of 15,000 spindles and 700 looms. The output on their new line of Lynwood dress goods is sold ahead for the next six months. Fall styles of this line will be shown by their selling house at an early date. The capital stock is now $200,000. Col. LeRoy Springs is president; H. S. Adams, treasurer and buyer, and J. A. Adams, superintendent.

*Texas, Cuero. Nothing has been positively announced as yet in regard to the contemplated improvements and enlargements at the Cuero Cotton Factory. Matters are still in the formative stage, the new organizations not yet having come into existence, although subscriptions have been completed. A meeting will be held within 30 days to organize, etc. As noted in an earlier report, J. C. Saunders of Bonham, Texas, will be manager.

Mills Starting Up.

Alabama, Oxford. When the old Planters' Mfg. Co. plant is started up about February 1 it will be under the name of the Southern Mills Corp. and employment will be given to 100 hands. The new company will be incorporated with capital stock of $200,000. Officers have not been elected as yet, but W. F. Osler will be buyer and Otto Latsch, superintendent. When changes are completed there will be a total of 7,500 spindles operated by steam power on sash cord, cotton rope, clothes lines and mop yarn.

Georgia, Fort Valley. A new concern known as the Fort Valley Cotton Mills has taken over the Fort Valley Yarn and Hosiery Mill containing 3,500 ring spindles. The capital stock of the new company is $90,000. F. O. Miller has been elected president; A. J. Evans, treasurer, manager and buyer, and R. T. Comer, superintendent.

*Georgia, Hartwell. The directors of the Hartwell Mills, the new company which has taken over the old Witham Cotton Mills, hope to begin manufacturing about February 1. Organization has been effected with J. M. Geer, president; W. H. Geer, treasurer, and C. W. Rice, superintendent and buyer. Woodward, Baldwin & Co. will be the selling agents. Two thousand spindles have been added and the old twisters and looms have been thrown out and new Northrop looms installed. The equipment consists of 8,000 ring spindles and 200 looms on which sateens and fine sheetings will be made.

Massachusetts, Williamstown. It is expected that in about two or three weeks repairs and changes in the Williamstown Mill, recently purchased by the Greylock Mills of North Adams, will have progressed far enough to allow practically all of the mill being started up. Details of changes have been given previously.

*North Carolina, King's Mountain. Manufacturing has been started by the Sevier Cotton Mills Co. This company has taken over the plant of the John Mfg. Co., as noted previously, and starts business with $60,000 paid in. Lawrence S. Holt is president and Robt. L. Tate, treasurer and buyer.

WOOLEN.

New Mills.

Caanda, Ontario, Peterboro. A new worsted yarn plant is to be established in Peterboro, and will begin manufacturing about May 15. It will be known as the Bonner-Worth Co., and will be chartered with capital stock of $35,000. E. Worth, formerly manager of Penman's, Ltd., worsted department at Paris, is to be superintendent of manufacturing, buyer and seller. He is now in England buying worsted machinery. I. Bonner, formerly superintendent of No. 9 Mill of Penman's, Ltd., is to be financial manager. They will start with 1,760 spindles, buying tops and selling direct. 2/18s to 2/30s yarns will be manufactured at first and they will have equipment for dyeing and bleaching. A 100 h. p. motor is to be installed to supply power.

*Canada, Ontario, Woodstock. About February 1 the new Woodstock Textile Co. will be ready to begin manufacturing. As noted in a full report given previously, the new company will operate the machinery formerly operated in Philadelphia by the Hasley Mfg. Co., the former vice-president of which, Robert J. McCuen, will be resident manager of the new company. Men's wear, dress goods, damasks, lap robes and upholstery goods are to be made on 31 broad and 46 narrow looms.

Connecticut, Putnam. On January 1 a new concern known as the Parker-Durant Co. began the manufacture of wool shoddies and extracts, operating 9 sets of cards, 3 pickers and dye house by steam and water power. The company has cap-

ital stock of $25,000. A. M. Chaffie, Oxford, Mass., is president; J. L. Brown, Oxford treasurer; E. G. Gibson, manager and buyer. The office is at Oxford. The concern is also equipped to make boxes for woolen, cotton and other mills.

*New York, Amsterdam. A charter has been granted the Amsterdam Carpet Co. with capital stock of $15,000. John Ambrose of Rifton, N. Y., will be elected president; Charles Van Kleeck, treasurer, and Joseph Riley, superintendent. As noted in an earlier report all kinds of carpet yarns will be made and a plant consisting of 2 sets of cards and 800 spindles will be located at 17 Cedar St. Electric power equipment will be installed and manufacturing will commence about April 1 Catlin & Co. will be the selling agents.

Pennsylvania, Philadelphia. A charter will be asked for the Chescent Spinning Mills, with John A. Dale, Albert Butterworth and Henry W. Grant as incorporators. The company will commence its operations at Howard and Berks Sts., where machinery is being installed for the spinning of woolen and merino yarns.

*Washington, Washougal. Within a few days the Union Woolen Mills will begin manufacturing. Machinery has been removed from Union, Ore., and is being thoroughly overhauled and placed in modern buildings which have been constructed. The main mill is 60 by 120 ft., 3 stories high; dye house and scouring room, 40 by 80 ft.; power house, 20 by 50 ft. The buildings are located on the banks of the Washougal and Columbia Rivers, 25 miles from Portland. Dr. F. J. Bailey is president; Arthur C. Burgess, secretary, and B. A. Churchill, superintendent.

Enlargements and Improvements.

Connecticut, Bridgeport. The new economizer tower at the plant of the Salts Textile Mfg. Co. which has been under construction for several months is completed and in use. It is for the purpose of heating water for dyeing and is 125 ft. high.

*Connecticut, Mechanicsville. Electric power equipment in the new weave shed of the French River Textile Co. has been tested and found satisfactory and everything is in readiness for the setting up of machinery equipment. As noted in an earlier report the equipment is to brought here from Woonsocket, R. I., where it now occupies a part of the River Spinning Co.'s plant on Kendrick Ave.

Maine, Dexter. Amos Abbott & Co., Inc., have installed electric motors and henceforth the plant will be operated by electric power. The Morrison Woolen Co. recently changed over to electric power.

*Maine, Lewiston. Orders have not been placed for the reported increase in the equipment of the Columbia Mills, Thos. Kelly & Co., Boston, proprietors.

Maine, North Berwick. Old mules in the plant of the North Berwick Co. have recently been replaced by 5 new pairs of mules

Maine, Waterville. Water will be taken from the Kennebec River for dyeing and washing operations and for the fire sprinkler system in the Wyandotte Worsted Co.'s plant and a new system of water works is to be installed. Work has been started on a water tower that will be 95 ft. from the ground to the top of the tank, which will hold 30,000 gallons of water. About 4 weeks will be required to make these improvements.

Massachusetts, Farnumsville. Repairs are being made on the boilers of the Wuskanut Mill and the dye house is closed temporarily. Operations will be resumed in full in a few days.

*Massachusetts, Hudson. The new department of the Hudson Combing Co., located in the old Cohair Building, will be in operation about February 1, giving employment to 20 hands. Alterations on the building and the installation of machinery have been in progress since early in December.

Massachusetts, Lowell. A large weaving mill will be built by the Massachusetts Mohair Plush Co. on Western Ave., the necessary land having been acquired recently from the Burnham & Davis Co. The erection of this new mill was projected some time ago and was temporarily abandoned. Plans about to be prepared will call for a larger structure than was originally intended, it is understood. The mill, a part of which has been running on a 5-day schedule, is now operating to full capacity.

Massachusetts, Northboro. The Woodside Woolen Co. contemplates the purchase of a new water wheel, a new boiler and a few new looms.

*Massachusetts, Uxbridge. Men are working in the Rivulet Mills recently purchased by Lawrence Keegan of Wilsonville, Conn., and it is said the mill will be started soon. The old narrow looms are being broken up. L. P. Keegan, son of Lawrence Keegan, is superintending the changes which will include putting in 2 new fulling mills and new broad looms to replace the old narrow looms. It is said about 20 new looms will be installed. It is estimated that two months will be required to get the plant in shape. Men's wear fabrics will be made.

*New Hampshire, Milton Mills. A new engine for the blanket mill of John E. Townsend has been received. As noted several weeks ago the mill has been running only part of the time on account of low water in the mill pond.

New York, Jamestown An addition is being built to the dye house of the Odsonia Mills, Cleveland Worsted Mills Co., 154 by 42 ft., 1 story high.

Pennsylvania, Philadelphia. The Kilmarnock Textile Manufacturing Co., with a capital of $50,000, Philip Lauten, president and treasurer, and C. L. Fetterly, secretary and general manager, now located at Emerald and Adams Sts., where they are manufacturing Scotch fabric "Kilmarnock" rugs on 14 looms, are arranging for the removal of their plant to the new building at Ontario and D Sts., where more floor space will be acquired and their equipment increased.

Pennsylvania, Philadelphia. Messrs. Sykes Bros., spinners of carpet yarns with 14 sets at Hancock and Dauphin Sts., are removing the equipment of the worsted spinning plant formerly operated by the late firm of Birch & Son, containing 2 worsted cards, 2 combs and 2,000 spindles at Adams and Jasper Sts., to their present quarters, where they will operate it on carpet yarns as a department of their woolen spinning mill.

Pennsylvania, Reading. J. G. Leinbach Co., Inc., manufacturers of cassimeres and worsteds at 337-43 North 4th St., are installing new equipment to increase the output.

Rhode Island, Allendale. With the additional machinery purchased, the Allendale Worsted Mills will soon have 6,000 spindles in operation. It is planned to use space on the two upper floors of the new mill for the new equipment. The lower floor is being reserved at the present time as there is some talk of adding a weaving plant. Nothing definite as to this has been decided upon as yet.

*Rhode Island, Bristol. Brick work on the addition to the Cranston Worsted Mill is up to the second story. The addition will be 4 stories high when completed.

*Rhode Island, Washington. The new dye house of the Livingston Worsted Co. will be in operation within the next two weeks. It is a 1-story, brick building, 84 by 48 ft., with tar and gravel roof. The floor is of cement. The new equipment consists in part of 6 peice dyeing kettles and there is space for 3 more. A new brick, 2-story boiler house has been completed and 2 new boilers installed.

Utah, Provo. It is expected the Knight Woolen Mills will reopen April 1. Wm. U. Hanke, now with the Davenport Woolen Mills Co. of Davenport, Ia., has been engaged as superintendent and between now and April 1 is expected to make some changes and improvements.

Mills Starting Up.

Maine, Dexter. Mill No. 2 of the Morrison Woolen Co. will soon start on a 24-hour schedule. It has been closed for several weeks. The power for this mill will be furnished by the Dexter Electric Co. The Morrison Woolen Co. was incorporated a few weeks ago to take over and operate the Morrison Mills.

Massachusetts, North Dana. Crawford & Tyler have started up their plant again. Meltons and suitings are manufactured on 2 sets and 24 narrow looms. They buy cotton warps, 16s to 24s.

Massachusetts, Quinapoxet. The Cyrus G. Wood plant, which has been idle for some time, has been leased by Horace Wyman of Worcester, the owner, to C. S. Taylor and M. Bell, who operate a woolen plant at Hope Valley, R. I., which they propose to remove to Quinapoxet in time to begin manufacturing in the new quarters by March 1. Some increase in equipment is contemplated.

Massachusetts, Uxbridge. Lawrence Keegan of Wilsonville, Conn., the woolen manufacturer who purchased the Rivulet Mills, will put in 20 new Knowles looms. The buildings are being repaired. It will be several weeks at least before manufacturing can be started, but it is probable that machinery will be in operation in about two months.

*Massachusetts, Worcester. The new factory building for the Wachusett Thread Co. will be built in the spring and will be used for thread manufacturing purposes. They have not decided how much new machinery will be put in and will not arrive at this decision for three or four months, but do not expect very much new equipment will be required as they are building chiefly for the purpose of securing more room. Spool cotton for the manufacturing trade is the product. Peter Wood is president; James Montgomery, secretary and treasurer, and Chas. Dolan, superintendent.

New York, Haverstraw. Edward C. Kearns and Joseph Carroll, of Paterson, have established a silk dyeing plant here and are doing business under the style of the Kearns & Carroll Silk Dyeing Co. Later the business is to be incorporated and Mr. Carroll will be president and superintendent and Mr. Kearns, treasurer.

*North Carolina, Burlington. The Keystone Finishing Mills, recently built for the purpose of dyeing and finishing hosiery and other knit goods, have begun operations. J. W. Murray is president and J. M. Browning, treasurer, manager and buyer.

Pennsylvania, North Wales. A new steam engine for the Asbestos Fibre Spinning Co. has been set up and is being used to run a large dynamo which furnishes the current to operate 15 electric motors used in various parts of the mill. The new building which was completed a short time ago connecting the mill with the old machine shop building is being rapidly fitted up with machinery.

Pennsylvania, Philadelphia. S. Samler & Co., with William Reifferscheidt as superintendent and buyer, have equipped the first floor of the building at 1514 North Front St. with 65 braiders and other machinery on which they are manufacturing a line of millinery braids and dress trimmings, which they are selling direct.

Pennsylvania, Philadelphia. Sibson & Stern, Inc., of Wayne Junction, manufacturers of lace trimmings for underwear, have completed an addition to their present mill building which will give then 50 per cent. more floor space. This additional space has been filled with new machinery which will enable them to keep pace with the rapidly increasing demand for their goods.

Pennsylvania, Pottsville. The Pottsville Bleaching & Dyeing Co., Thos. McMahon, manager, which has been bleaching knit goods only for the past year or so is arranging for the enlargement of the plant by an addition to the present buildings and the installation of machinery for dyeing hosiery. It is expected the enlargement will be made next fall.

*Rhode Island, Woonsocket. The plant of the Rosemont Dyeing Co., recently destroyed by fire with loss estimated at $40,000, will be rebuilt.

SILK.

New Mills.

Connecticut, Willimantic. The Willimantic Industrial Co. has organized with Geo. F. Taylor, president; Walter B. Knight, vice-president; M. Eugene Lincoln, secretary and treasurer. This company is to erect a mill to be used by the Rossie Velvet Co. of Mystic as a branch mill and bids will soon be asked as it is hoped to begin construction work by March 1.

*Pennsylvania, Allentown. L. H. Kemmerer & Co. will begin manufacturing silk ribbons this month, with equipment of 20 looms. Construction work was started on a building in November and they are practically ready to begin the production of goods. L. H. Kemmerer is superintendent and buyer. The plant will be operated by electric power.

*Pennsylvania, Peckville. The new silk throwing mill headed by F. A. Peck will be opened early in January, giving employment to 100 hands. W. H. Kilgour, manager of the Ashley Silk Co. of Scranton, is associated with Mr. Peck in this enterprise.

Pennsylvania, Williamsport. Sixty looms will comprise the initial equipment of the new silk mill now being erected on Oliver St. for Thos. Morrison & Sons and will be operated on broad dress silks. Contract for this equipment has not been placed. Thos. Morrison, the senior member of the firm, attends to the buying. The new mill will be modern in every particular and will be equipped with electric drive. This is not a corporation. The names of the men interested are Thomas, George and Arthur Morrison.

*Rhode Island, Westerly. The Lehigh Valley Silk Mill of South Bethlehem, Pa., has leased the brick mill on Main St. originally known as the Phenix Mill and will install silk throwing machinery, operating as a branch of the main plant at South Bethlehem. Alfred Neuberger, formerly president of the Westerly Silk Mill which moved to Norwich two years ago and changed its name to the New England Silk Spinning Co., will be agent.

MISCELLANEOUS.

*Indiana, Monticello. The Chicago Thread Mfg. Co. has completed the new mill on which construction work was started some months ago. It is 2 stories high with basement, 75 by 100 ft., of brick mill construction, and is equipped with a sprinkler system.

Kentucky, Covington. A new plant is to be erected for the Reliance Textile & Dye Works at Madison Ave. and Second St.

*Maine, Lewiston. The new dye house for the Lewiston Bleachery & Dye Works will be ready for use in about six weeks. The main part is 60 by 169 ft., with a wing, 60 by 66 ft., 2 stories high. Work will be started on another new building, 127 ft. long, 3 stories high, in the near future.

Maine, Alfred. An 80 h. p. steam engine has been installed in the plant of the Alfred Embroidery Co. and a night and day schedule is now in force to catch up on overdue orders. Some further improvements in the plant are contemplated. Wm. A. Illigen is superintendent and buyer.

*Maryland, Baltimore. Contract has been awarded by the Maryland Bleach & Dye Works for a building to replace the mill recently burned. The building will cost about $4,500 and the machinery equipment about $10,000.

*Maryland, Baltimore. Contract has been awarded by the W. & J. Knox Net & Twine Co. for the erection of the addition previously reported. The construction work will cost about $6,000.

*Massachusetts, Brockton. The Star Webbing Works have removed into their new mill on So. Skinner St. Seven new looms have been added to the equipment.

Massachusetts, Lawrence. A building has been secured by the Northern Waste Co., organized in December, as reported at that time. The new company will handle the waste of the Amoskeag Mfg. Co., Manchester, N. H., the Suncook Mills, Suncook, N. H., the Lancaster Mills, Clinton, and the Pacific Mills and Atlantic Cotton Mills, Lawrence. At the plant in Lawrence the waste will be sorted and prepared for the market. James J. White, Jr., is president and manager, and has offices at 184 Summer St., Boston.

Massachusetts, North Adams. To give additional power the Windsor Print Works have ordered 30 motors, which will be installed in various parts of the plant. Power will be furnished by the North Adams Gas & Electric Light Co. The company was confronted by the problem of putting in new boilers or buying power and the decision was for divided power supply. The present power equipment will be retained.

Massachusetts, North Dighton. John J. O'Haire is president and general manager of the Harodite Finishing Co. and David Steiner of New York is secretary and treasurer. The concern will bleach, dye and finish textile fabrics and as noted previously has leased for a term of years the Chadwick Print Works.

FAILURES AND SUSPENSIONS.

Georgia, Roswell. S. Crowley of Roswell, and Robt. F. Maddox of Atlanta, have been appointed receivers for the Laurel Mills Mfg. Co. They have been directed to continue the business for 30 days and to borrow the necessary funds for this purpose. Mr. Crowley is president of the company.

New Jersey, Paterson. Geo. D. Hendrickson of Jersey City has been appointed receiver for I. R. Cohen, manufacturer of broad silks on 150 looms in the Highland Mill, corner of Clay and State Sts. The liabilities are said to be about $60,000 and the assets $38,000.

North Carolina, Wilson. W. M. Farmer, secretary and treasurer of the Wilson Cotton Mills, has been appointed receiver for the company. The liabilities are estimated at $50,000 and the assets $120,000. It is understood the property will be bid in by the present stockholders, the company reorganized, and the mill put in operation as soon as possible.

Pennsylvania, Philadelphia. The Gass Dyeing & Finishing Co., with a capital of $25,000, which started up here about a year ago, dyeing and finishing cotton and worsted piece goods, has gone into the hands of a receiver, J. Howard Reiber having been appointed by the courts to attend to the affairs of the company.

FIRES.

Connecticut, Thompsonville. Loss of between $2,000 and $4,000 was caused by fire and water in the plant of the Hartford Carpet Co. The damage is almost entirely on goods which were stored in the basement.

Maine, Bangor. Fire in the building in which the Berlin Knitting Co. is located caused the knitting company a loss of between $6,000 and $8,000 on stock and $1,000 on machinery. The insurance is $6,000.

Massachusetts, Fall River. Fire in the plant of the Hopkinson Dyeing & Textile Works caused loss of about $1,200, which has been adjusted by the insurance companies and repairs will be made at once. The plant is in operation in part at the present time and it will be running in full again in about two weeks.

New Jersey, Paterson. Fire in the Harding Mill on Straight St. caused considerable loss to the Paterson Silk Mfg. Co. The Star Silk Mill and Wolff & Silber, who occupies the two floors below the Paterson Co., also suffered considerable damage from water. The full amount of the loss is not as yet known, but the damage is severe enough to close all three plants.

Pennsylvania, Philadelphia. The three-story brick warehouse of A. J. Cameron & Co., spinners of worsted yarns at Erie Ave. and Pacific Sts., was recently destroyed by fire with a loss on the building and contents which consisted of wool, amounting to about $10,000.

Pennsylvania, Watsontown. Fire destroyed the plant of the Watsontown Knitting Co., with loss estimated at $50,000. A large warehouse adjoining the main plant also was destroyed. It is considered likely that the buildings will be rebuilt and the plant put in operation again.

Rhode Island, Woonsocket. The plant of the Rosemont Dyeing Co. has been damaged by fire, causing loss estimated at between $35,000 and $50,000, fully covered by insurance. The walls of the building have been destroyed and the machinery seriously damaged if not rendered unfit for further use.

Vermont, Springfield. Fire in the drying and dyeing department of the plant of W. H. H. Slack & Bro., manufacturers of wool shoddies, caused loss roughly estimated of $2,500.

FACTS AND GOSSIP.

*Alabama, Eufaula. It is announced that J. R. McClurd will be secretary and treasurer of the Glenola Cotton Mills instead of A. C. Covey, who was first named. This new company acquires the old Barbour Cotton Mills.

Canada, Ontario, Toronto. There is a report that an English carpet manufacturing concern will build a mill at New Toronto in the spring for the manufacture of carpets and rugs.

Connecticut, Danbury. A charter has been granted the Tweedy Silk Mills with authorized capital stock of $500,000. The incorporators are Arthur E. Tweedy, Chas. E. Mallory, Martin H. Griffing and E. Thatcher Hoyt. It is understood the new corporation takes over the Tweedy Silk Mills operated by A. E. Tweedy, manufacturer of silk hat bands and braids with 100 looms and 100 braiders.

Connecticut, Norwalk. It is expected that the full equipment of 26 lace machines will be working in the new Dresden Lace Works within a month. 24 looms are in the building and the other 2 are expected to arrive any time. Some of the looms which have been set up are working overtime. This promises to become one of the most important industries in Norwalk.

*Connecticut, Norwalk. Rumors that the Salts Textile Mfg. Co. will discontinue the Norwalk branch are correct. Negotiations are said to be pending for the sale of the plant to outside parties and if these are not successful the equipment will be sold on the expiration of the lease in July. As far as the Salts Mfg. Co. is concerned the plant will be closed in about three months, as preparations have already been begun to clean up the stock.

Connecticut, Norwich. While it is understood that Giron Bros. & Co. of St. Etienne, France, are still considering the matter of establishing a branch in Norwich, there is nothing new in regard to the project. It is regarded locally that it will be some time before any definite action is taken.

*Connecticut, Rockville. The deadlock which resulted in the closing of the Rock Mfg. Co. will not be broken, according to reports, until the differences between president Frederick Swindells and treasurer Arthur T. Bissel are settled by the Court.

Connecticut, Willimantic. The finishing department of the Willimantic Mills of the American Thread Co. is running on full time and the manufacturing department, which is now running 52 hours a week, will be running full time shortly.

Georgia, Fort Valley. A charter has been granted the Fort Valley Cotton Mills with capital stock of $90,000. This is the new concern which

has taken over and is operating the old Fort Valley Yarn & Hosiery Mill.

Idaho, Boise. The Idaho State Grange favors the proposition to establish a woolen mill in southern Idaho, and has appointed a committee of which H. T. French is chairman, to use all possible influence in assisting the establishment of such a plant. John Bearrup, formerly of the Rio Grande Woolen Mills Co., Alburquerque, New Mexico, came here a few months ago and has since been agitating the project.

Kansas, Ottawa. It is reported the Thissen Silk Fabric Co., now located at Fonda, N. Y., will build a plant here and will remove its plant from Fonda.

Maine, Bridgeton. The Forest Mills Co. will reorganize. The mill was shut down a few weeks ago and it is not likely organization will be completed in time to start manufacturing this season.

Maine, Madison. The Indian Spring Mill of the American Woolen Co. has been running on a 4-day schedule, but will start on full time in a few days.

Maine, Sangerville. The Sangerville Woolen Co. is employing two shifts of hands, operating the mill night and day.

Maine, Winslow. The new Winslow Mfg. Co., recently organized with capital stock of $10,000, will manufacture in Winslow. Edward Chase of Winslow, A. W. Lord of Vassalboro, and Dana P. Foster of Waterville, are the men interested. Mr. Chase will be president.

Massachusetts, Chelsea. An increase is to be made in the capital stock of the Boston Gore & Web Mfg. Co. from $30,000 to $50,000. Alfred Hopkins, president and treasurer of the company, will subscribe for the new stock. There will be no immediate enlargement of the business.

Massachusetts, Fall River. Frank H. Towne, a salesman for Andrews & Horton, 38 Rock St., Fall River, and Wm. J. Dunn are interested in the organization of a company to locate a fine goods mill just over the state line in North Tiverton. The proposed site is owned by Mr. Dunn and includes buildings formerly occupied by Billings & Clapp Co. for the manufacture of chemicals and is at present used by James Marshall & Co., engaged in the fur business. The buildings are of light construction and will be unfit for use except for storage purposes. Buildings will be erected if the project is successful. Plans of organization have not been made and there will be no attempt at organizing unless enough capital is invested to make the project a success. Considerable encouragement has been received, however, from the few investors that have been interviewed. A 60,000-spindle fine goods plant is contemplated.

Massachusetts, Fall River. The Anawan Mills, organized some time ago to handle the waste of a number of the local cotton mills and prepare it for the market, began operations last week. It is understood the equipment is not as yet complete.

*Massachusetts, Great Barrington. Local capital has been interested in the reorganization of the Edgemere Mfg. Co. A. D. Pratt has invested $10,000 in the new company. Plans are now under way looking toward making the change within a short time and the erection of a yarn mill.

Massachusetts, Lawrence. Work is being started in the new Pacific Mill's weave shed as fast as looms can be set up. Several hundred looms are now in operation. The worsted yarn mill is not ready and yarns are being supplied to the looms from the main mill. The printing machinery purchased from the Hamilton Mfg. Co. of Lowell has arrived and will be stored until the new print works below the Wood Worsted Mills are completed.

*Massachusetts, Lawrence. Brick work on the new merino yarn mill of Wm. Whitman is finished and the ground is being graded. Machinery is being received. As noted previously, French spun worsted and merino yarns will be manufactured.

Massachusetts, Lawrence. Work is progressing rapidly on the foundation walls of the new mill being erected for the U. S. Worsted Co., which will probably be known as the Uswoco Mill.

Massachusetts, Lowell. The fly wheel on an engine in No. 7 Mill of the Boott Mills burst causing damage estimated at $50,000. The cause of the accident was the breaking of the belt on the governor of the engine, allowing the engine to run at a tremendous speed. There were no fatalities, only two persons being slightly injured.

Massachusetts, Manchaug. A 20-foot fly wheel burst in the engine room of the mill of B. B. & R. Knight and tore through the roof, causing damage estimated at $20,000 to the engine room and mill.

Massachusetts, Medway. One of the mills of the Medway Mfg. Co. is employing two shifts of hands, running night and day.

Massachusetts, Methuen. At the meeting of stockholders of the Tremont Worsted Co. it was voted to increase the capital stock from $100,000 to $200,000 by issuing 1,000 preferred shares, par value $100. These shares are entitled to 7 per cent. cumulative dividends and have no voting power.

Massachusetts, Methuen. The business of the Marshall Worsted Co. will be wound up. The company made an assignment for the benefit of creditors December 24. Albert H. Chamberlain, 76 Chauncey St., Boston, is one of the assignees.

Massachusetts, North Adams. Within two weeks the Beaver Mill of the Hoosac Cotton Mills will be closed and all the manufacturing for the present will be done in the Eclipse Mill. There have been rumors that some changes would be made in the Beaver Mill, but the company has not as yet made a statement.

*Massachusetts, Quinapoxet. The machinery now operated by C. S. Taylor and M. Bell at Hope Valley will not be removed to Quinapoxet as it was leased by them with the mill building. The Cyrus G. Wood plant here which they have leased contains 9 sets of cards and 120 looms.

which exceeds their equipment at Hope Valley about one-third. They will operate here under the style of Taylor & Bell.

Massachusetts, Spencer. In a short time it is expected the Pricilla Woolen Co. will be in operation on full time. Very little is being done at present, but E. A. Evans, president and manager, says that orders are coming in well.

Massachusetts, Taunton. The Old Colony Mfg. Corp. has been granted a charter with capital stock of $200,000 to make cotton, linen, silk and wool and worsted goods. Henry M. Lovering, Taunton, is president, and Henry H. Culver, clerk.

New Hampshire, Tilton. The Tilton Mills have started up on full time in all departments and have sufficient orders on hand to insure running to full capacity indefinitely.

Massachusetts, Westboro. The Westboro Mills, formerly operated on carpets and similar goods by Louis Dusenbury were sold at auction to the Westboro Savings Bank for $7,870.

*Massachusetts, Worcester. The new Queensbury Mills, incorporated under the laws of Massachusetts with capital stock of $400,000, is a consolidation of the Queensbury Mills and the Greenwood Mills. There will be no change in the management. H. Hodgson, who has been president and treasurer of both mills, continues in the same capacity in the new corporation and Fred Hodgson is assistant treasurer and general manager. The board of directors consists of Messrs. H. Hodgson, Fred Hodgson, Edwin Wilcox, S. B. Emery, C. B. Coburn. Turner, Tucker & Co., Boston, are offering for sale some of the 7 per cent. preferred stock of the new corporation.

Massachusetts, Worcester. Samples are being made up in the Kent Woolen Mill at Janesville and it is probable the mill will be started soon. The Wallace Woolen Mills, who formerly leased the property, discontinued manufacturing last July, claiming the plant was badly in need of repairs.

Mississippi, Laurel. Samuel Stevenson of Nottingham, England, discussed with citizens of Barnett and Laurel, a project for locating a lace making industry in this locality. It is said there are many natural advantages.

Missouri, St. Louis. A site for a cotton mill has been selected in Carondelet by the Business Men's League of St. Louis and efforts are being made to induce cotton manufacturers to inspect it with a view to locating a mill here.

New Hampshire, Tilton. An overtime schedule is in force in the carding and spinning departments of A. D. Carter's woolen mill.

New Hampshire, West Concord. The local plant of the Crescent Worsted Co. is being operated overtime.

*New Jersey, Burlington. Looms are being started in the new mill of the Burlington Silk Co. Machinery from the old mill has not been removed as yet and the above refers to the machinery purchased from the receivers of the Neuberger-Phillips Silk Co.

New Jersey, East Rutherford. The Georgian Textile Mills, Inc., have been granted a charter with capital stock of $125,000 and have organized with George Schmiedel, president, agent and buyer, and Lillian B. Schmiedel, treasurer. For several months past Mr. Schmiedel has been engaged in building a plush mill at East Rutherford, and is now ready to begin operations. Silk and cotton velours will be produced. Mr. Schmiedel was at one time vice-president of the Peerless Plush Mfg. Co. of Paterson, N. J.

New Jersey, Paterson. The American Shawl Co., at present located in the Pope Mill, is reported as leasing space in the unfinished mill at the corner of River and Bridge Sts.

New Jersey, Paterson. Altschuler Bros., who have been located in the Dale Mill for a number of years, will move into the Levy Mill at River and Bridge Sts. on its completion. They have leased one floor and half of another floor. The Levy Mill will be ready for tenants in March or April.

New Jersey, Weehawken. E. A. Bodenmann, Inc., have been granted a charter with capital stock of $25,000 to manufacture embroideries and other fabrics. It is understood a manufacturing plant will be established here.

New Jersey, Paterson. A charter has been granted Frederick Neuburger & Co., Inc., to manufacture silk and other textile fabrics with capital stock of $50,000. The new corporation succeeds to the present business of Frederick Newburger & Co., located in the Ward St. Mill. Frederick Neuburger is president, superintendent and buyer. The New York office is at 22 East 21st St.

New Jersey, Pluckamin. The capital stock of the Superior Thread & Yarn Co. has been increased from $400,000 to $500,000.

New Jersey, Somerville. The Redfern Lace Works have been incorporated with capital stock of $300,000 to manufacture laces and embroideries. The incorporators are C. E. Chapman, Oakland, L. Carmen and A. Redfern of Nutley.

New York, New York City. L. & L. Cloth Examiners, Shrinkers & Finishers Co. has been incorporated with capital stock of $3,000 and will succeed to the business of the same name at 108 W. 11th St. Morris Levy, 25 St. Nicholas Ave., one of the incorporators, is president of the corporation.

*North Carolina, Salisbury. It is reported that the Vance Cotton Mills have determined particulars regarding the proposed increase, to finance which the capital stock was increased from $100,000 to $300,000 and that an additional mill is to be built to spin fine yarns.

North Carolina, Salisbury. The weaving department of the Kesler Mfg. Co. is being operated night and day, two shifts of hands being employed.

*North Carolina, Stubbs. On March 14 the property of the Buffalo Mfg. Co. will be sold to the highest bidder at the Court House in Shelby, N. C. The plant contains 3,600 ring spindles and 1,720 twisting spindles.

New Publications.

[Any work noticed under this head can be obtained through the office of this journal.]

Fairchild's Code for the Men's Wear Trades; 210 pages, 3 3/4 by 5 1/2. Published by Fairchild Co., 42 East 21st St., New York. Price $1.

This is a very elaborate telegraphic code suited for correspondence in the men's wear trade. It is indexed by subjects and under each head are given the messages with the respective code words. The book is of convenient pocket size and will prove of great value to not only the home offices but to traveling representatives of men's wear houses.

Dockham's Clothing Manufacturing and Cutting-Up Trade Directory. Dockham Publishing Co., 6 Beacon St., Boston. Price, $6.00.

The 7th edition of this publication has been issued for 1910-11. It contains a directory of the clothing, garment, the cutting-up and jobbing trade and also department stores. The list of manufacturers covers not only clothing, but specialties, novelties and some kinds of knit goods. It also contains a list of converters of cotton goods, New York offices, etc. In the manufacturing section, the information includes the name of the company, kind of goods made, number of sewing machines, power used, if there is a laundry, post office address, location of the plant and branches.

Textile Calculations by the Slide Rule; by S. Brierley, Technical College, Huddersfield, England; 54 pages, 4 by 6 1/4; published by the author. Price 50 cents.

This is an excellent handbook of the slide rule as applied to textile calculations. Beginning with an explanation of the rule itself, the author explains its use for various calculations required for textile works, such as gearing calculations, greasy and scoured wool, reduction of yarn counts, weight per yard, cloth setting, weaving calculations, knitting mensuration and reduction of weights and measures.

Heaton's Annual, Commercial Handbook of Canada, 1911; 389 pages, 5 by 7; Heaton's Agency, Toronto, Canada. Price $1.00.

This is the 7th and revised edition of an annual which contains a vast fund of information likely to be of value to business men. It contains a copy of the Canadian customs tariff and customs law, decisions of the customs board, tariff rulings, changes in the tariff, directory of the Canadian government, postal information, a list of chartered banks and of attorneys and collecting agencies. There is a section devoted to business opportunities throughout Canada and another to general information, which is classified under the heads of agriculture, finance, fisheries, forests, manufactures, mining, sport and hunting. There is also a useful collection of conversion tables.

Cotton Facts; by Alfred B. Shepperson, 15 William St., New York. Price $1.

We have received the December, 1910, edition of this annual which has been brought up to include the season of 1909 and 1910. All of the statistical features in previous editions are included. There is a valuable review of the cotton season of 1909 and 1910. A copy of the book should be in the possession of every one engaged in the cotton trade.

The Carded Yarn and Shoddy Industry (Die Streichgarn-und Kunstwoll-Spinnerei); Emil Hennig; Julius Springer, Berlin, Germany. Price $1.50.

It is to be regretted that this work is not published in English as there is a pressing need for a handbook of the carded woolen industry. To those woolen manufacturers who read German, however, it will be of great value. The fact that it refers to German methods increases rather than lessens its value for American manufacturers, as it gives information regarding new methods and leads the reader from the old ruts with which he is familiar. The book is freely illustrated and the following abstract of the table of contents will give an idea of its scope: Sorting, washing and drying wool; mungo shoddy and extracts; carbonizing; carding; spinning. These processes are treated in detail and in an appendix is given the series of tables of Continental systems of yarn numbering usually found in foreign textile books.

Business Literature.

Sewing Machine Instruction Book; the Metropolitan Sewing Machine Co., Nyack, N. Y.

An instruction book for the care, operation and adjustment of the various machines which the company build for manufacturers' use. The booklet takes up in detail the description of each of their machines. Half-tone cuts and detail line drawings illustrate the text and make the operation and care of the machine very clear. Photographic reproductions of the different parts of every machine, properly numbered, afford an easy method of identification in replacing parts. A correspondingly numbered price list is contained in the book. Instructions for different adjustment, proper tensions, suggestions on operation and care are so plainly given as to answer every question that is liable to arise in connection with these machines.

Economical Fire Room Methods; B. F. Sturtevant Co., Hyde Park, Mass.

This is a reprint of an article published in "Power and the Engineer" of Aug. 2, 1910. It gives interesting details regarding the steam boilers at the Wood Worsted Mill, Lawrence, Mass. These boilers are fired by hand and the temperature of the stack is 200° F. Mr. Low gives the report of the gas analysis which indicate a very high efficiency in composition. These remarkable results are due to the use of the Sturtevant economizer and to the systematic methods adopted by George H. Diman, the consulting engineer at the

mills. Mr.. Low's paper is written in a very interesting style. It gives a remarkably clear idea of the operation of the boilers and the results obtained. In an appendix is an illustrated description of the Sturtevant economizer.

Patent Woodworking Machinery Catalogue No. 200. The Defiance Machine Works, Defiance, Ohio.

This book would be impressive for its size alone, covering as it does more than five hundred pages, eight inches wide and eleven inches deep. It is heavily bound in boards, and stamped in gold. The book illustrates and describes the very large line of patent labor-saving woodworking machinery, invented and manufactured by the Defiance Machine Works. The index alone covers fifteen and one-half pages, so that for whatever purpose a woodworking machine is needed, it is very easy, by reference to the index, to find just what page illustrates and describes the machine wanted. Starting with an outside view of the works, the book gives illustrations of the interior of various offices and departments of the company's plant. It describes the qualities and adaptability of the various machines, making it comparatively easy for a prospective buyer to select what is best suited to his requirements. Throughout nearly the entire book the left hand pages consist of illustrations of machines, and the right hand pages of descriptive matter, thus obviating the great objection to having illustrations far removed from the descriptive matter. It is a catalogue that should bring in business, and is a credit to The Defiance Machine Works.

How a Revolvator Saves Time, Money and Space; New York Revolving Portable Elevator Company of Jersey City, N. J.

An attractive 16-page booklet describes a portable tiering machine with a revolving base, which is adaptable for stacking bales, boxes, barrels, heavy machine parts, rolls of leather and paper, cable reels, etc., in all kinds of warehouses. It is suitable for use in narrow aisles, and it is claimed that two men and revolvator can stack as much goods as can five men by the ordinary method. It is further claimed that due to the fact that the aisles can be much narrower and that the warehouse can be stacked solid to the ceiling, the capacity of the ordinary warehouse is increased 50 per cent. when packed with a Revolvator. Copies of the above pamphlet can be had by applying to the manufacturer.

Power Transmission Machinery; The Hill Clutch Co., Cleveland, O., manufacturers of power transmission machinery.

This is Catalogue No. 9, and is larger than the company's previous ones, is attractively bound, printed on coated paper. Its 194 pages contain information of value to anyone contemplating the buying of clutches, power transmission machinery or equipment. It also contains rules, formulas, tables of measure, table of circumference and area of circles, and a general cipher code, which will prove useful to the company's customers.

Heddle Points; The Steel Heddle Mfg. Co., 2110-18 West Allegheny Ave., Philadelphia.

This is the name of a booklet which will be published every other month with a view of still further extending the knowledge of the merits of the steel heddle products among the trade. The January issue contains a picture of their new plant and some interior views, also the story of what has already been accomplished in the introduction of flat steel heddles. In spite of the predictions concerning the difficulty of converting mill owners to the use of a new kind of heddle, their experience has justified their optimism and their success is not questioned now. Each issue of "Heddle Points" contains "Good Words from Good People" who are using the heddles.

Calendars for 1911.

The Mason Machine Works, Taunton, Mass., are sending out an attractive monthly calendar. The color scheme is particularly harmonious. There is a finely executed illustration of their machinery.

Mauger & Avery, wool dealers of Boston, are sending out a beautiful calendar entitled, "The Morning of Life," from an original painting by Charles C. Curran. It represents a group of young girls and the reproduction of the exquisite coloring of the original painting is faithfully portrayed.

The Rutholt Dye Works, 22d and Spring Garden Sts., Philadelphia, have recently issued a very pretty calendar which they are distributing to the trade. The calendar, in addition to containing a picture entitled "A Quiet Pool," also conveys to the manufacturing trade that they are dyers and finishers of woolen and worsted yarns, slubbing and raw stock, worsted and woolen men's wear and dress goods and cotton worsteds, also winders, coners and spoolers of all kinds of yarns. The calendar may be had by communicating with the works at the above address.

Specialists in Machinery Engineering.

The Michel-Kurze Co., with offices in the Hudson Terminal Buildings, New York, has just been organized to do photo retouching and illustrating of machinery subjects. The business will be managed by A. Eugene Michel, and the staff of artists will be in charge of Wm. F. Kurze, who was art director of the Scientific Engraving Co. during the past four years and is one of New York's well known artists in mechanical lines. The extensive engineering and advertising experience of both members qualifies this firm to deliver high grade work to manufacturers of machine tools, steam and electric power plant apparatus and other engineering products.

The Murphy Iron Works, manufacturers of the Murphy automatic smokeless furnace, have opened an office in the Empire Bldg., Atlanta, Ga., to take care of their southern business. The office will be in charge of Roland B. Hall, Jr.

Hosiery Stamping.

The method and improvement in appearance of the stamp upon hosiery has been as varied and gradual as has been the evolution of the machinery for making the article and the ever increasing beauty, style, finish and lasting quality of the hosiery itself.

There was first applied to the hosiery a mere ticket or sticker, unattractive and removed as promptly by the dealer as could consistently be done. Then came in vogue a metal stamp which is dipped into whiting or color and stencilled on, which was followed by the wax bronze copper plate impression on soaped tissue paper, applied under heat. All these methods are still used to some extent in either one or more mills today.

Finally there has been perfected by an ingenious Frenchman a transfer made by a series of carefully registered prints, producing a most brilliant gold stamp, where the mills will adapt themselves to a precise method of application, at a rapidity of from 240 to 300 dozen hose per day, by a single girl, according to the skill of the operator, without the loss of but an occasional stamp.

The effect of such stamps is so undeniably rich and clear, that it is regarded by all who have adopted it as a distinct advance in marking, branding and enhancing the appearance of the hose and package. Leading mills have adopted it because it makes a clean department of what has often been one of the dirtiest, at only a slight additional cost to them over their former method.

Jobbers and dealers like the gold stamp as it is an advertisement that cannot help but be impressive, pleasing and promote sales, and confidence in their article by the ultimate buyer or consumer. When a dealer has once seen the brilliant gold stamp on hosiery, the salesman offering hosiery without a similar equally attractive stamp is at a disadvantage.

The Meyercord Co. of Chicago and Philadelphia, the largest decalcomania transfer manufacturers in the world, are now making these attractive stamps for the knitting trade. They guarantee prompt deliveries. The Eastern trade is looked after from Philadelphia Office located in the Bulletin Bldg., while Western inquiries will get prompt attention from Chicago Office, located in the Chamber of Commerce Bldg.

Full information as to how they are applied, and samples can be had free for the asking. The method requires no machinery, tools or special devices.

A Practical Example.

A well known textile mill here in New England found that a soap shipped to them in solid barrels, in spite of its good color, fine appearance and apparent firm consistency, contained 80 per cent. of water. A further study showed that this soap was not economical to use with their hard water supply and was otherwise unsuited to the special character of their work. They consulted the textile department of Arthur D. Little, Inc., Boston, which prepared for them a specification for a satisfactory soap. This resulted in the purchase of a better product and a direct saving of 25 per cent. on the material and 50 per cent. on the freight charges.

Castle's Ivory White Mill Paint.

Castle's "Ivory White" sanitary mill paint is made in dry powder form and is mixed with cold water. The Castle Water Paint Co., 123 Liberty St., New York, which makes it, states that five pounds of the powder will make one gallon of good paint which, when applied by brush or spraying machine, will cover 200 square feet. It is not a kalsomine, but a practical paint for all interiors. It is pure white, claimed not to rub, flake, or peel off, to be sanitary, fire-proof, and light reflecting. The price is low and a gallon costs only a few cents, which of course means a great saving over the cheapest oil paint. A working sample will be forwarded upon application.

The New England Ventilating and Heating Co.

The stock of the New England Ventilating and Heating Co., 926 Manton Ave., Providence, R. I., has been acquired by Walter S. Williams, and the following officers have been elected by the new management: Walter S. Williams, president and treasurer; E. A. Williams, secretary. The board of directors is composed of the president, secretary and F. H. Dutcher. The business of the company consists of the planning and installation of ventilating and heating equipment, and the manufacture of blowers, dust pipes, tin cylinders, cans, separators, engine oil guards, dust collectors, fire doors, sheet metal specialties, dye house and mill supplies. Special attention will be given to textile mill work.

Efficiency Engineers.

Eugene Szepesi, of the firm of Szepesi & Farr, 90 West St., New York, has been appointed New England manager for the Emerson Co., efficiency engineers, New York. The New England offices will be located in the Oliver Bldg., 141 Milk St., Boston, where Szepesi & Farr are also located. The Emerson Co. make a specialty of systems for manufacturing establishments and have devoted special attention to textile plants. Mr. Szepesi is thoroughly familiar with the methods of systematic management established by Harrington T. Emerson, the president of the Emerson Co., and invites textile manufacturers to consult him in regard to any problems that may require solution.

The United States Hoffman Co.

The annual dinner given by the president to the officers and selling force of the United States Hoffman Co. of Syracuse, N. Y., was held this year at the Yates Hotel, when covers were laid for twenty-five. Matters of interest to the selling of their pressing machines for the coming year were entered into, and all expressed themselves as looking confidently for a larger gathering at the next meeting.

William R. Dupee.

The following is a tribute to the late William R. Dupee by leading members of the Boston wool trade:

The death of Mr. William R. Dupee comes as a shock to the wool trade, although he had retired from the business several years ago. He was for many years one of the leading men in the business, a man of upright character and sterling honesty, whose word was as good as his bond. He was fair in his competition and generous with his friends. His opinion was consulted and valued by the banks, and up to two weeks ago he attended meetings of the Five Cent Savings Bank, where he was a director.

Although for some years past he has not been an active member of the wool trade, we nevertheless feel that his death comes to us as a personal loss, and with this feeling we hereby tender to his family this expression of our appreciation of his worth, and our heartfelt sympathy to them in their bereavement.

(Signed):—Luce & Manning, Brown & Adams, Jeremiah Williams & Co.; Dewey, Gould & Co.; J. Koshland & Co.; Hecht, Liebmann & Co.; Farnsworth, Thayer & Stevenson; Hobbs, Taft & Co., Crimmins & Peirce, Charles F. Cross & Co., Hallowell, Jones & Donald; Goodhue, Studley & Emery; Patterson & Co.; Cordingley, Barrett & Co.; Willett & Co., Fred M. Blanchard, H. C. Grant, F. N. Graves & Co., O. N. Purdy & Co., Wm. J. Follett, Salter Bros. & Co., Edwin Wilcock, Williams & Smith, Eisemann Bros., Swift Wool Co., A. H. Clifford & Son, Jacob H. Wood & Co., E. B. Carleton & Co., John G. Wright, Rosenthal Bros., H. & F. P. Simonds, J. H. Wheelock & Co., Louis B. Harding, Alexander Livingstone, Geo. W. Benedict, Henderson & Co., Albert W. Smith & Co., Mauger & Avery.

Lubrication of Roller or Ball Bearings.

The proper lubrication of any bearings, even the ordinary babbited boxes, is always important, but where roller or ball bearings are used the very life and efficiency of the bearings themselves depend largely upon the lubricant used.

The Royersford Foundry and Machine Co. of Royersford, Pa., manufacturers of the Sell roller bearings, found it so difficult to obtain a satisfactory lubricant for this sort of work that they have brought out a lubricant of their own which is especially adapted to meet the unusual requirement of bearing lubrication. "Rollerine" is the name they have adopted for this special bearing lubricant, and they state that during the years in which they have been testing it out in actual practice they have been able to accomplish more with "Rollerine" than any lubricant they were previously able to obtain.

Anyone writing to the Royersford Foundry and Machine Co. at their Philadelphia office, 52 N. 5th St., can obtain full information on both "Rollerine," the bearing lubricant, and Sells roller bearings, the latter of which our readers are probably already familiar with.

New Branson Knitting Machine Co.

A new company has just been incorporated under the name of the New Branson Knitting Machine Co. with Mr. H. Lilley, president; Mr. Jos. North, vice-president, and Mr. Geo. C. Amrhein, secretary and treasurer. The said company has bought out the business of the Branson Machine Co., one of the pioneers in the knitting machine business. The new company will build all makes of the Branson machines, including the new automatic ribber, single, double and triple weave mantles machines, semi-automatic and 15/16 automatic knitters, also hand machines for family and institution use. They can promptly furnish parts and needles for the Branson machines, keeping a large stock of both on hand, and state that orders for parts are generally mailed the same day as they are received.

While the new company has been in business but a short time, the machines which it is turning out are well liked by the old customers, one of whom recently wrote: "I desire to say that the machines which we had from you recently are working very satisfactorily. It is a pleasure to us to use them, as those purchased from the old company did not work satisfactorily and have been a source of continual annoyance. I also wish to express our satisfaction in dealing with a firm which is prompt and explicit. This manufacturer was requested to send back the machines which he spoke of as being unsatisfactory, so that they might be repaired and put in proper condition.

New Woolen Mills for Tasmania.

Vice-Consul-General Henry D. Baker, Sydney, Australia, sends a report to the State Department in which he says that owing to the efforts of the Tasmanian agent-general in London, a syndicate has been formed there and $219,000 capital subscribed, in addition to $97,330 underwritten by a Hobart firm, for erecting woolen mills in Tasmania. The total capital is to be $486,650.

It is proposed to erect in 1911 two mills, one at Launceston, in northern Tasmania, and one at Hobart, equipping them with the latest and most approved machinery, so that the goods can be produced at minimum of cost. One mill will make blankets, flannels, and Baltic cloth, etc.; the other, rugs, tweeds, khaki, etc. When working full capacity the mills will, it is estimated, employ 600 to 700 hands and produce about $289,320 worth of goods annually.

There are already three woolen mills in Tasmania, but these do not produce nearly sufficient goods to supply the Commonwealth of Australia, which annually imports $14,600,000 of woolen goods. So great is the local demand for Tasmanian woolens that it is expected to find a ready market in Australia for all the products of the new mills. Indicative of the demand for these goods it is stated that an order was sent from the mainland of Australia to the Tasmanian mills for 1,000 pairs of blankets, none of which could be furnished. Orders must be placed many months before they can be executed.

Recent Textile Patents.

BRAIDING CARRIER Tension. 981,938. Simon W. Wardwell, Providence, R. I.

BRAIDING MACHINE. 981,938. Edward F. Parks and Simon W. Wardwell, Providence, R. I.

BRAIDING MACHINE Tension Device. 981,957. Simon W. Wardwell and Edward F. Parks, Providence, R. I.

CLOTH SPONGING and Finishing Machines. Steam Cylinder for. 980,268. Robert W. Hull, Hingham, Mass.

DRYING CLOTH. Apparatus for. 981,621. Edward B. Davis, Chicago, Ill.

EMBROIDERY MACHINES. Fabric-frame for. 981,836. Arnold Bosshard, Arbon, Switzerland.

HOSIERY FRAME. Straight. 981,663. Thedor Lieberknecht, Hohenstein-Ernstthal, Germany.

KNITTED FABRIC. Producing Openwork. 981,318. Robert W. Scott, Leeds Point, N. J.

KNITTING MACHINE for Looped Fabrics. Circular. 981,483. John H. Scott, Nottingham, England.

KNITTING MACHINE Take-up. 980,826. Albert H. Obenhoff and Dennis J. Broderick, Gloversville, N. Y.

KNITTING MACHINES. Drop-stitch and Lacework Mechanism for Circular. 981,351 Arthur N. Ames, Franklin Falls, N. H.

KNITTED FABRIC. 978,622. Arthur S. Musgrove, Pittsfield, Mass.

LOOM. Jacquard. 981,766. Joseph Jagger, Poughkeepsie, N. Y.

LOOM PICKER Check. 981,050. William M. Barber, Phenix, R. I.

LOOM CONTROLLING Mechanism. 981,299. Henry P. Merriam, New York.

LOOM FILLING Exhaustion Indicating Mechanism. 981,112. Alonzo E. Rhoades, Leeds Point, N. J.

LOOM BEAMS. Supporting Means for. 981,944. Alonzo E. Rhoades, Hopedale, Mass.

LOOM. 982,204. Erasme Gagnon, Pawtucket, R. I.

LOOM PATTERN Mechanism. Carpet. 981,762. Charles Hugo, Worcester, Mass.

LOOM WEFT-PARTER. 981,859. Simeon Schoon Jackson, Readville, Mass.

LOOM ATTACHMENT. 981,656. Solomon Kendrick, Rochester, N. Y.

LOOMS. Pneumatic Selector for Short-weft. 978,645. Henry E. Rathbun, Worcester, Mass.

LOOMS. Heald and Shuttle-box Operating Mechanism of. 978,329. David Nichols, Shipley, England.

LOOMS. Batten for Narrow Ware. 980,236. Joseph Frank, New York.

LOOMS. Lay Structure for Wire. 980,591. Wilford C. Brown, Holyoke, Mass.

LOOM. 978,248. Albert B. Weissenborn, Appleton, Wis.

LOOM WARP Stop Mechanism. 978,345. James Wright and Hebden Wright, Ingrow, England.

LACE MACHINES. Jacquard Connection for. 980,384. Peter Woll, Jr., Philadelphia, Pa.

LACE or Ribbon Holder. 980,534. John W. Kerr, Minneapolis, Minn.

LOOM SHUTTLE. Hand Threading. 978,462. Herbert L. Litchfield, Southbridge, Mass.

PILE-CUTTING Machine. 980,991. Arthur Morton, Warwick, R. I.

PILE FABRICS. Knife Holder and Knife for. 980,992. Arthur Morton, Warwick, R. I.

SILK REWINDING Apparatus. 980,682. Pietro Saracco, Saluzzo, Italy.

SILK or Warp in a Single Operation. Apparatus for Preparing. 981,122. Pietro Saracco, Saluzzo, Italy.

SHUTTLE. 978,502. Willard W. Stearns, Holyoke, Mass.

THREAD FORMING Apparatus. 981,624. Dominick Dreier, Livingston, Mont.

UNDERGARMENT. 981,815. James A. Struthers, Minneapolis, Minn.

WOOL WASHING Machine. 981,123. Frederick G. Sargent, Graniteville, Mass.

WOOL WASHING Machines. Parallel Rake-motion for. 982,094. Frederick G. Sargent, Westford, Mass.

Recent Textile Trademarks Registered.

"Mandarin." Silk, cotton and mercerized sewing threads. Gudebrod Bros., New York.

"Violet." Knit underwear. Carson, Pirie, Scott & Co., Chicago, Ill.

"The Countess." Ladies' and misses' waists, overskirts, etc. Alfred D. Richey, Chicago, Ill.

"Patriot." Cotton piece goods. Grinnell Willis & Co., New York.

"Superba." Hosiery and reefers. H. C. Cohn & Co., Rochester, N. Y.

"Voiliron." Woolen dress goods. Strawbridge & Clothier, Philadelphia, Pa.

"Security." Hosiery. Central Knitting Co., St. Louis, Mo.

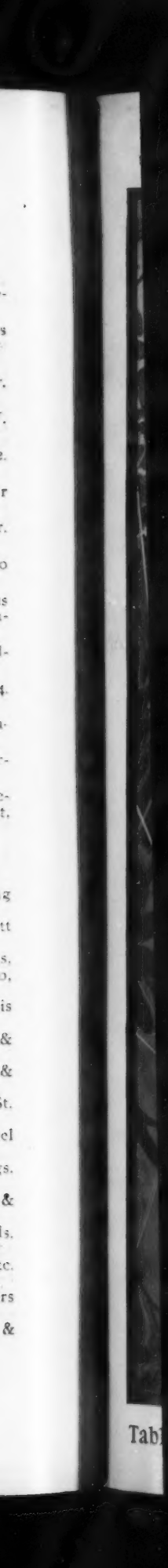
"W. B." Men's and boys' trousers. Samuel Weber & Co., Providence, R. I.

"Rumworth." White and colored shirtings. Thomas A. Harris, New York.

"Oak." Woolen dress goods. Strawbridge & Clothier, Philadelphia, Pa.

"Damoselle." Cotton and linen piece goods. Trippe, Barket & Co., New York.

"Bonnie Lassie." Cloth, canvas, leather, etc. Clark-Hutchinson Co., Boston, Mass.

"Aero." Broad silks in the piece. Rogers Thompson, West New York, N. J.

"Silotta." Cotton piece goods. National Cloak & Suit Co., New York.